

## **II. THE F. EDWARD HÉBERT SCHOOL OF MEDICINE**

**While the Regents have always recognized the importance of maintaining a medical curriculum which incorporates the unique challenges created by the use of biologic, chemical and radiologic weapons, we were especially pleased to note that DoD's University of the Health Sciences is now widely recognized as a "first stop" for reliable education, training and research in the medical response to weapons of mass destruction. The entire University effort in support of our Nation's response to the terrorist threat is a testament to the foresight of the Department in maintaining such a unique asset.**

- **The Honorable Everett Alvarez, Jr., J.D., Chairman,  
USUHS Board of Regents, Memorandum for the Secretary  
of Defense, December 4, 2001.**

### **ESTABLISHMENT**

**Background.** From 1945 to 1950, there was an acute deficit of medical experience resulting from the rapid downsizing after World War II. The loss of physicians was so acute, and retention so poor, that the Army and Navy medical departments began residency programs as a recruitment and retention device. In 1950, the physician shortages forced the involuntary recall of reservists and also forced the retention of those eligible to retire.

After the Korean War, the United States, for the first time in peacetime, maintained large, active-duty military forces through conscription and allocated significant resources to build and maintain a world-wide military presence. The medical departments of the Army, Navy, and Air Force participated in this expansion and relied on conscription. During this time, over 90 percent of all graduating physicians and dentists served on active duty for an average of two years.

During the conflict in Vietnam, from 1964 to 1972, medical support of a sophisticated nature was deployed in fixed facility hospitals with staff and equipment equal to those of academic medical centers in America. The helicopter essentially replaced the motor ambulance for evacuation; and, air evacuation to the United States became routine. Capitalizing on the lessons learned in past wars, preventive medicine kept the infectious disease and non-effectiveness (inability of the forces to participate in combat activities) rates at the lowest levels of any war, while rapid evacuation and advanced surgery reduced the died-of-wounds rate.

The conscription of physicians, which began in 1950, ended in 1973 when the draft law was repealed. In anticipation of this, a military medical school (USUHS) and a scholarship program (HPSP) in civilian medical schools were established by Congress in 1972 to provide physicians for the Armed Forces. The Uniformed Services Health Professions Revitalization Act of 1972, Public Law 92-426, established the HPSP Program to be a flexible source for the quantity of physicians required by the Armed Forces; USUHS was established to provide a cadre of military medical officers who would serve as career officers, providing continuity and leadership for the Military Health System.

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**USU's First Academic Program.** The F. Edward Hébert School of Medicine was established by Congress as part of Public Law 92-426 in 1972, with its first class graduating in 1980. The early development of the University concentrated on USU's first academic program, the School of Medicine. **The Honorable Anthony R. Curreri, M.D.** was appointed as the University's first President in 1974; **Jay P. Sanford, M.D.**, joined **Dr. Curreri**, at the USU President's request, and was later appointed as Dean, SOM, in May of 1975. He served as Dean through 1990. The initial development of objectives for the SOM was accomplished through the combined efforts of the Board of Regents (BOR), the BOR Educational Affairs Committee, Dr. Curreri, Dr. Sanford, and special working groups. Activities used to develop these objectives included committee meetings, retreats, and consultation with a variety of experts from military medicine and civilian medical organizations and institutions. Individuals and groups consulted included: the Surgeons General of the Army, Navy and Air Force; Chiefs of the Medical Departments/Services of the Army, Navy, and Air Force; physicians from the Walter Reed Army Medical Center, the National Naval Medical Center at Bethesda, the Malcolm Grow Air Force Medical Center at Andrews Air Force Base, the Wilford Hall U.S. Air Force Medical Center, the U.S. Army Academy of Health Sciences, Sheppard Air Force Base Academy of Health Sciences, Brooke Army Medical Center, and the Armed Forces Institute of Pathology; the Secretary of the Air Force; the Secretary of the Navy; the Association of American Medical Colleges (AAMC); the American Medical Association (AMA); the Liaison Committee on Medical Education (LCME); the Department of Health, Education, and Welfare; the National Institutes of Health (NIH); George Washington University; Georgetown University; and, Howard University.

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## MISSION

**The USUHS shall: 4.1. Educate and train competent medical personnel qualified to serve the needs of the Uniformed Services through providing the highest quality education programs in the health sciences; 4.2. Place high priority on educating and training personnel to meet the combat and peacetime medical needs of the Armed Forces; and, 4.3. Grant applicable advanced academic degrees; establish postdoctoral and postgraduate programs, and technological institutes; conduct medical readiness training and continuing education for members of the Uniformed Services in the health professions; and prepare individuals for careers in the health professions in the Uniformed Services.**

- DoD Directive 5105.45, signed by **The Honorable John J. Hamre, Deputy Secretary of Defense**, dated March 9, 2000, page 2.

**Consistent Mission Direction Focused on Readiness.** USU has a twenty-nine year history of guiding statements, mission direction, goals and tasking documents from the Congress, the Executive Office of the President, and the Department of Defense. From the words of the School of Medicine's "Founding Father," **Congressman F. Edward Hébert**, ... as he described how he first envisioned the University during the 1947 timeframe:

**The mission of USUHS is to produce...dedicated young officers who...will be able to mobilize and deploy rapidly...to meet military and civilian crises...The University will provide opportunities for aspiring young military officers to attain academic recognition..."** (the Life and Times of Congressman F. Edward Hébert, 1976, page 408)

to the 1999 mission statement quoted above from the Department of Defense... the goals of the USU SOM have remained consistent; the SOM must provide: 1) a cadre of career-oriented physician officers who will provide leadership and continuity for Uniformed medicine; 2) unique training in combat medical care, trauma, mass casualties, the response to weapons of mass destruction, medical logistics, and rapid deployment; 3) joint training in a multi-Service environment; and, 4) the opportunity for health care professionals throughout the MHS to attain academic recognition.

Strategic Planning. A formal process of strategic planning was initiated in 1991 to set priorities for the University. The process was conducted by an executive steering committee chaired by the USU President and included representation from the entire USU community. Mission and vision statements and guiding principles were completed in early 1992. Since that time, specific goals, strategies, and objectives have been established for the University, to include metrics for achieving those goals.

The SOM community has been actively involved in the development of the USU Strategic Plan, participating in the initial strategic planning training sessions during 1991, the finalization of objectives and metrics during 1999 and 2000, and the strategic planning sessions held during April of 2001. This multi-year process has included institutional retreats, town meetings, departmental briefings, and printed and electronic updates as a means of communicating with the SOM faculty and staff.

To ensure that the SOM's future direction is consistent with the Military Health System, the SOM strategic planning process is guided by the current strategies and goals of the Military Health System, the strategic planning policies and guidance established by the Office of the Assistant Secretary of Defense for Health Affairs. The SOM Departments must show a direct relationship with USU's overall Strategic Plan when submitting their requests for future budgets. A formal process for identifying program needs and for submitting increased budget requests tied to the Strategic Plan has been established. A School of Medicine Strategic Plan has been written and has undergone review by the Basic Science Chairs Committee, the Clinical Science Chairs Committee, and the Faculty Senate.

Internal and External Departmental Review Process. A program was adopted by the School of Medicine in 1998 which mandated each department to conduct a "self-study" every five years or at the time of the appointment of a new chairperson. The self-study would be followed with a review of the self-study by a group of "peers" from outside of the University. From 1999 through 2001, self-studies and external reviews have been completed by the Departments of Dermatology, Family Medicine, Military and Emergency Medicine, Obstetrics and Gynecology, Neurology, and Surgery. Other departmental reviews pending completion include: Anesthesiology; Anatomy, Physiology and Genetics; and, Radiology and Nuclear Medicine. The results of these studies will be used to chart future courses for these departments in education, research, and community service.

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**Mission Accomplishment...SOM Graduates Provide Continuity and Leadership for Military Medicine.**

Retention of SOM Alumni and Unique Training Ensures Continuity for Lessons Learned in Military Medicine.

**I believe our opponents don't understand our business... they say medical care, and they envision peace time medical care as the only business we are in. In fact, we have two broad categories of business. One is called readiness. The other is called the peace time benefit.**

**USUHS, is the best investment in readiness medicine that we can make, (it) provides a tremendous baseline for us. We train our uniformed services graduates in the benefit missions through residencies, but they (USUHS graduates) have a foundation in readiness that we cannot get anyplace else. We don't practice medicine in the military. We practice military medicine.**

- **Testimony by the Surgeon General of the Air Force, Lieutenant General Paul K. Carlton, Jr., before the Senate Appropriations Committee, Subcommittee on Defense, February 28, 2001.**

**In Vietnam... I had no military training prior to coming in. It was a very challenging, difficult experience... when I got there I learned how to take care of Marines myself. I was alone. There was no place to med-evac patients, so through the night I had to keep casualties alive until we could move them during the daylight...**

**The emotional experience of a young doctor who does not have the right kind of training in these kind of things has driven me to where I am today.**

**My whole life since that time has been dedicated to try to prepare people for combat, and USUHS has been able to train these young physicians to be far more ready than I was. They are superb in medicine. The training that USUHS provides is far more than just the medical training. What we have here is the ability to train Army, Navy and Air Force and Public Health Service physicians from day one to work together in a joint environment. They go and they jump out of airplanes with the Army, they go with us to the Marine Corps, they go with us aboard ships at sea, and they go to the air. They do all these things together... from day one... so they develop a joint mentality that has a value of which you cannot quantify the cost of. So, when the time came for me to select a doctor who was going to go on the Joint Task Force for Somalia, I chose a USUHS teacher, ...one who had been there, who spoke the language, who was able to do joint planning and to effectively bring the troops to Somalia. You cannot cost that out...the value of having people with this kind of training is really irreplaceable. There are many, many, many courses and experiences at USUHS that are just not duplicatable. It is a national resource. They come as leaders...they are dedicated to stay with us for a long time... We want experienced people to stay in the military... Now that we have USUHS, we cannot give that up.**

- **Testimony by the Surgeon General of the Navy, Vice Admiral Donald F. Hagen, before the Senate Armed Services Committee, March 2, 1994, pages 35-37.**

Since its first graduation in 1980, through April of 2002, USU has granted 3,101 medical degrees; 2,561 of those graduates remain on active duty in the Uniformed Services: Army - 1,000; Navy - 737; Air Force - 728; USPHS - 96. The active duty physician force in the MHS currently totals approximately 11,833 physicians (Army - 4,149; Navy - 3,584; Air Force - 4,100); the 2,465 USU SOM Graduates on active duty in the Army, Navy, and Air Force represent 21 Percent of those 11,833 physicians. The early founders had hoped that the USU graduates would equal at least 10 percent of the total physician force; the USUHS SOM has exceeded that original milestone. During the complicated era following "right-sizing," USU has steadily provided an excellent source of career-minded physicians who are uniquely skilled in the practice of military medicine. Where Congress had envisioned a retention rate close to 70 percent, the overall retention rate for USU SOM graduates from its first graduating class in 1980 through the present, is 85 percent; of the ten USU SOM classes which graduated between 1990 and 1999, the retention rate is 97.3 percent. These retention rates become even more significant in light of the recruitment and retention concerns currently reported by the Armed Forces. In addition, the SOM graduates 97.3 percent of those who matriculate.

SOM Graduates Present Clinical Skills Required for MHS Residency Programs.

**The system in place for the documentation of the comparability of clinical educational experiences is an outstanding model for other institutions to emulate.**

- Letter to USUHS, Liaison Committee on Medical Education (LCME), dated April 6, 2002.

**Senator, the three of us (Surgeons General) make up the Executive Board for the Uniformed Services University of the Health Sciences (USUHS), and we have a direct impact on the university...over the last eight years, as I have commanded a major medical center and also as the Surgeon General, I have learned of the quality of the product of USUHS and the focus that USUHS has on military medicine and the importance (of USUHS) to the Surgeons General. I would be hard put to be without the graduates of USUHS.**

- Testimony by the **Surgeon General of the Navy, Vice Admiral Richard A. Nelson**, before the Senate Appropriations Committee, Subcommittee on Defense, on February 28, 2001.

**USUHS is a dramatic difference in depth and degree and experience and exposure and immersion in what we call military medicine, that is not available in the civilian community. My experience has been we have uniformly superior products in the (USUHS graduates). I happened to be stationed on an Army post before I came here, with a small clinic run by a young doctor. I saw the difference between his predecessor and himself, the USUHS graduate. He hit the ground running and turned the clinic around in just a few short weeks. It made a lasting impression on me.... From the clinics**

**to the largest Air Force hospital in this country, Wilford Hall, USUHS graduates excel... A third of the USUHS graduates at Wilford Hall are in positions of high responsibility for their grade...I like what I see.**

- **Testimony by the Surgeon General of the Air Force, Lieutenant General Alexander M. Sloan, before the Senate Armed Services Committee, March 2, 1994, page 37.**

Evidence of the high quality of training that SOM students have received comes from many sources. For example, each academic year, the Association of American Medical Colleges (AAMC), with the assistance of medical school administrators, conducts a survey of graduating seniors at medical schools throughout the United States. Students are asked to rate statements that cover their entire medical school experience. Included among the numerous topics surveyed are premedical preparation, pre-clinical education, clinical experiences, student services and the overall quality of the medical education received. In April of 2001, the USU Office of Student Affairs reported that the ratings of the Year 2000 Medical School Graduation Questionnaire Final Individual School Report show a consistently strong, positive evaluation by USU students at a level well above the all-schools comparison. For example, 81 percent of the USU SOM seniors strongly agreed with the statement, "Overall, I am satisfied with the quality of my medical education." Only 39 percent of the all-school group rated the statement as "Strongly Agree."

Traditionally, more than 75 percent of USU SOM graduates receive their first choice of specialty and location for their first year of residency training. In January of 2002, the Office of Student Affairs reported that the results of the 2001 Joint Service Graduate Medical Education (GME) Selection Board for the USUHS SOM Class of 2002 were favorable. The overall selection rate for FIRST CHOICE programs was 80 percent; 132 out of 166 USU students matched for their first choice both in specialty and training site. Fourteen additional students received their first choice in specialty for a resulting 88 percent who received their first choice in specialty. Feedback obtained from residency program directors indicates that SOM graduates are consistently recognized as well-prepared to complete graduate medical training.

In addition, USU students have consistently passed the United States Medical Licensing Examination (USMLE) Steps 1 and 2 at rates higher than the national average. In 1999, the National Board of Medical Examiners (NBME) began computer-based testing (CBT) for the USMLE Step 1 and 2 Examinations. The Step Examinations are administered at Prometric Testing Centers throughout the calendar year. Most of the USU fourth year students (SOM Class of 2002) completed the CBT between July and September of 2001. The overall performance for the Class of 2002 was strong; the average performance and the pass rate were significantly above last year's performance. The variability in scores has increased with the new CBT; this would be expected given the reduction in the number of questions and the introduction of a new testing format. The USU SOM class mean was 213 (above last year's mean of 210 and 208 for 1999); the USU SOM first-time pass percentage rate was 98 percent (above the 2000 rate of 97 percent and the 1999 rate of 95 percent); the national pass rate during 2000 was 95 percent.

Operational Assignments, Leadership Positions, and Unique Understanding of Military Medicine Are Substantiated.

**These USUHS alumni serve in critical roles that are vital to the readiness mission of the Military Health System (MHS). The extraordinary retention of these military officers ensures continuity for the MHS and the safeguarding of lessons learned during combat and casualty care. Currently, USUHS School of Medicine alumni represent over twenty-one percent of the total physicians on active duty in the military services. Furthermore, a significant number of USUHS graduates who have completed their residency training hold leadership or operational positions throughout the MHS.**

- Testimony by **Vice Admiral Michael L. Cowan, Surgeon General of the Navy**, before the House Armed Services Committee, Subcommittee on Military Personnel, on April 10, 2002.

**Our Uniformed Services University of the Health Sciences has robust and long-standing educational programs in the medical aspects of biological and chemical terrorism developed for our military medical and graduate students. The University is now actively involved in adapting these programs to the civilian medical education community in both traditional and interactive web-based formats. The University works closely with other federal agencies, the private sector, and the American Association of Medical Colleges and the American Medical Association to accomplish these important and timely educational goals.**

- Testimony by **The Honorable William Winkenwerder, Jr., M.D., Assistant Secretary of Defense for Health Affairs**, before the House Committee on Government Reform, Subcommittee on National Security, Veterans' Affairs, and International Relations, on November 7, 2001.

**As for recruiting, we have some of the best programs in the world. The young men and women who are coming out of the Uniformed Services University of the Health Sciences are absolutely superb!**

- **Surgeon General of the Army, Lieutenant General James B. Peake**, Military Medical Technology, Volume 4, Issue 6, 2000, page 18.

**Do I value USUHS? ...I value it a great deal and (consider that) it is a major asset to this country. I do value the output. I can tell you that in the Army we have a deficit of training in the type of individuals who can go into combat with a battalion...and I do get complaints from line officers that we very frequently have physicians in there who are not ready for that. That is never the case when a USUHS graduate fills that bill.**

- Testimony by the **Surgeon General of the Army, Lieutenant General Alcide M. LaNoue**, before the Senate Armed Services Committee, March 2, 1994, page 35.

The highly dedicated USU graduates are earning promotions at above average rates; they have become well-respected in their medical specialties, and hold significant positions of leadership in areas of military medicine ranging from special operations and hospitals, to the White House, to Kosovo deployments, and to assignments aboard ships at sea and the Blue Angels. SOM alumni are engaged in patient care or research in military hospitals and clinics around the world, administering to active duty members, retirees, and their family members. These military physicians and the thousands of other health professionals who have taken advantage of the numerous graduate and continuing education programs provided by the SOM, are living testimony to USU's mission as the Nation's Federal Health Sciences University.

Following an inclusive review in 1995, the General Accounting Office (GAO) confirmed that **“43 out of 44 commanders of major military medical units perceived that physicians from the University have a greater overall understanding of the military, greater commitment to the military, better preparation for operational assignments, and better preparation for leadership roles.”** The GAO reviewers also pointed out that they **“perceive that University graduates have a better appreciation of and greater satisfaction with the physician's role within the military”** than other accession sources (General Accounting Office Report, “Military Physicians - DoD's Medical School and Scholarship Program,” September 29, 1995, page 43).

A review completed in January of 1998, documented that of the approximately 1,431 USU graduates on active duty who were eligible to hold leadership positions, and were not in a post graduate educational status, 292 were serving as chairs, chiefs or heads of departments, directors of services, or program directors in military hospitals, clinics or centers. An additional 60 USU alumni were serving in operational assignments for the three military services. These 352 USU physician alumni were holding significant leadership and/or operational positions throughout the Military Health System (MHS). Another review conducted in February of 1999, documented that of the first six classes of USU graduates, from 1980 through 1985, 408 alumni remain on active duty; 170 of whom (approximately 42 percent) hold senior operational or leadership positions.

The USU SOM Selection Process Ensures Commitment and Exemplary Retention Rates.

**It is important to maintain a sense of continuity by remaining committed to the traditions, core values, and justifiable pride that are part of military medicine. Leaders organize, challenge others, provide the resources, and create the environment for others to achieve goals and accomplish remarkable feats... They make us believe in the nobility of a cause. The integrity and strength of character of the leader results in loyalty and devotion on the part of those who follow. It is the job of a teacher to keep bringing us back to certain basic principles. It is the moral obligation of the teacher to know his or her students, to recognize their individual needs, and to provide information, guidance, and encouragement during the learning process. The future of the medical departments appears bright when considering the quality of applicants seeking admission to the School of Medicine at USUHS. As a group, they have impressive credentials. Their application essays reflect a bright, highly motivated, and service-oriented cadre.**

- **RADM Donald L. Sturtz, MC, USN, (Retired), Professor, Department of Surgery, USU School of Medicine, "Commitment," Military Medicine, Volume 166, September 2001, pages 741-742.**

**High ethical standards, the candidate's own 'internal moral compass,' compassion, honesty, and integrity should be emphasized in the selection process for candidates to become the nation's physicians...Selection should employ MCAT scores and GPAs not as predictors of success in medical school, but as threshold measures to indicate only that applicants possess the intellectual endowment and scholastic aptitude needed to meet the academic rigors. Once candidates have satisfied those threshold requirements, we should give no further weight to academic credentials but make selections on the basis of character traits and aptitude for serving others.**

- **Jordon Cohen, M.D., President, Association of American Medical Colleges (AAMC), in his opening speech at the 108th annual meeting of the AAMC, on November 6, 1997.**

The USU SOM selection process has been identified as one of the major factors in the success of the overall retention rates of the USU alumni. All candidates are carefully screened during the interview process to determine the following: 1) already recognized sensitivity for national, public, and/or community service, which clearly has the potential for enhancement in federal service; 2) the presence of natural and adaptable leadership skills already documented in a variety of organizations and circumstances; 3) an enthusiasm for supportive care-giving directed at individuals and groups, forming the basis for involvement as a physician in the broad areas of medicine, and military medicine in particular; and, 4) a documented record of academic success which extends beyond the boundaries of any standard curriculum, as demonstrated through individual creativity, service, and/or research. A Matriculating Student Survey conducted by the Association of American Medical Colleges (AAMC) showed that compared to the national group of matriculants, USU SOM candidates were more likely to select medicine as a career because of the opportunity to serve the community and to lead, and less likely to seek a medical career for purposes of prestige or high income.

The SOM Committee on Admissions, faculty and student interviewers, and the SOM Office of Admissions work together to manage and implement the SOM Selection Process. The Committee on Admissions is comprised of men, women, active duty, civilian, clinical science, basic science, minority, and community representation for a total of 23 individuals. The applicant review process operates at subcommittee and full committee levels, with the initial review focusing on Medical College Admission Test (MCAT) scores and grade point averages (GPAs). The secondary review process is designed to enhance the opportunity for inviting applicants to interview. Candidates with academic records which would ordinarily preclude regular review at the subcommittee level and those not initially invited for interview are reviewed by the Committee Chairman. This allows the identification of candidates who may have been overlooked and supports the SOM effort to recruit active duty military applicants, disadvantaged individuals and underrepresented minorities. Folders of all interviewed applicants are reviewed by three separate subcommittee members and are presented for full committee review if ranked above the minimum threshold. However, special consideration is extended to underrepresented minority and active duty military applicants ranked at lower levels, and these candidates are also presented to the full committee. In addition, individual committee members may bring the application of any interviewed candidate to the attention of the full committee independent of the subcommittee ranking.

The “interview day” is consistently reported as a positive experience by applicants; during the interview process, the applicants take part in various activities, to include: organized briefings; two formal interviews; lunch; a tour of the campus with students; and, informal visits with the Associate Dean for Student Affairs, the Director of Admissions, the Assistant Dean for Admissions and Academic Records, the Vice President for University Recruitment and Diversity Affairs, the Assistant Dean for Clinical Sciences, faculty members, and the Commandant. Applicants are also given the opportunity to stay overnight with a student host. The selection process has continuously brought to the SOM a group of students who are academically qualified and well-motivated to practice medicine. In the history of the medical school, only two percent of the student body has had to be disenrolled for academic reasons; this is about one-third of the national average. The excellent percentage of students graduating (over 97 percent) is due to: 1) a good selection process; 2) a solid educational program; and, 3) genuine concern for those students who require academic or personal assistance during their time at USU.

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## **ACCREDITATION**

**At its meeting on April 3-4, 2002, the Liaison Committee on Medical Education (LCME) reviewed and accepted with appreciation your progress report on the documentation of the comparability of clinical educational experiences across clerkship sites. The system in place for documentation of the comparability of clinical educational experiences is an outstanding model for other institutions to emulate. Your next full accreditation survey is currently scheduled for the 2006-2007 Academic Year.**

- Letter from the Liaison Committee on Medical Education to the Dean, School of Medicine, dated April 6, 2002.

**Early Coordination with the Liaison Committee on Medical Education.** The developmental process for establishing the initial objectives of the SOM were accomplished through the combined efforts of the founding USU President, **Anthony R. Curreri, M.D.**, the Board of Regents (BOR), the Dean, **Jay P. Sanford, M.D.**, and, special working groups. Activities used to develop these objectives included committee meetings, retreats, and consultation with a variety of experts from military medicine and civilian medical organizations and institutions. Significant among those coordinating entities was the Liaison Committee on Medical Education (LCME).

### **SOM Program Accreditation.**

Background. The LCME accreditation process is designed to certify that a medical program meets prescribed standards; and, by awarding accreditation, the LCME indicates confidence in the quality of the medical school program. The accreditation process also fosters institutional and program improvement. The SOM received provisional accreditation from the LCME, a joint activity of the Association of American Colleges (AAMC) and the Council on Medical Education of the American Medical Association (AMA) in 1976. The SOM was fully accredited by the LCME in 1979, and has continuously maintained that status.

The SOM prepared a Self-Study during 1992 and was visited by an LCME survey team during January 11-14, 1993. On April 7, 1993, the LCME voted to continue full accreditation for seven years. The Dean was asked to submit a report to the LCME by January 1, 1995, addressing: 1) progress in curriculum reform, including decompression in the first two years; 2) the empowerment and role of the curriculum committee to review, evaluate, design, and manage the curriculum; 3) the status of filling chairs of academic departments, with special reference to the availability of space and financial resources to do so and to the energizing of education and research; and, 4) the appropriateness of enrollment size and the adequacy of clinical resources. Following the LCME request, an ongoing curriculum renewal process was initiated in June of 1993. In November of 1993, the Dean's Policy Memorandum regarding the structure and function of the curriculum committee was updated to assign responsibility to the curriculum committee in accordance with the LCME's guidance as described in Functions and Structure of a Medical School. Search committees were appointed to fill the open department chair positions. And, plans were initiated to develop third-year clerkship rotations at two additional sites. A report, submitted in December of 1994, detailed the status of progress in the four areas identified by the 1993

LCME response. The LCME accepted the report in February of 1995; and, it requested an additional report by September 1, 1996, to address the following: 1) any changes in class size stemming from the downsizing of the Uniformed Services; 2) the status of continued federal support; 3) further progress in curricular management, evaluation, and reform; and, 4) the system and results of monitoring the equivalency of educational quality and the evaluation of students across sites of clinical education. The response, dated August 16, 1996, indicated that the class size had not been affected by the downsizing of the Uniformed Services; and that federal funding was sufficient to support the University's programs. Also, for the 1996-97 Academic Year, an additional ten percent reduction in contact hours for first and second year students was implemented, resulting in an additional afternoon per week of student study time. In September of 1996, the LCME accepted that report; and, no further information was requested prior to the full accreditation survey scheduled for the 1999-2000 Academic Year.

LCME Self-Study and Site Visit - 1999. Following accreditation by the LCME in April of 1993, the LCME scheduled its next review of the SOM Program for reaccreditation in November of 1999. As a precursor to that review, the Associate Dean for Medical Education coordinated an institutional Self-Study. Self-Study Committees were established during 1998, assigned topic areas, and charged to review and analyze portions of the Medical Education Database as well as other information considered relevant to their topic areas. Reports were then submitted to the Steering Committee on February 1, 1999; all reports were reviewed by both the Steering Committee and a larger LCME Task Force. All data, Self-Study reports, and the Executive Summary were submitted to the Dean during the Summer of 1999. Following the Dean's review, those materials were submitted for review to the LCME and the Survey Team Members some months prior to the Survey Team Visit. The Site Visit took place between November 14-18, 1999. Exit briefings and follow-up correspondence from the LCME suggested a very successful visit and continued accreditation. Official notice from the LCME was provided during April of 2000: "The School of Medicine received continued full accreditation of the educational program leading to the MD degree for a seven-year term. The next full survey will take place during the 2006-2007 academic year" (Letter from the LCME to the USU President, dated April 13, 2000).

Excerpts from the Summary of the LCME Full Accreditation Report as Provided in the USU Board of Regents 2000 Report to the Secretary of Defense.

There is ample evidence that a large number of faculty and staff members had taken the self-study seriously and participated fully in the preparation of the report, which was thorough and showed meticulous attention to detail. In reaching its decision to continue full accreditation of the medical school, the LCME identified numerous institutional strengths:

1. The School of Medicine is very successful in meeting its mission in graduating physicians who are well prepared and committed to military medicine;
2. **Dean Val Hemming** holds a deep commitment to the values and success of the School of Medicine. He is a strong, capable leader who has been critically important in helping the school fulfill its mission;
3. The clinical curriculum is delivered in excellent military medical facilities, both locally and nationally;

4. The Department of Internal Medicine is to be commended for its success in creating a uniformly excellent clinical clerkship, comparable in quality across multiple educational sites;

5. The students are bright, academically talented, and uniformly dedicated to careers in military public service. They are consistently positive in their views toward their school and its faculty;

6. The support services provided by the Student Affairs Office are exceptional and appreciated by the students;

7. The faculty is available, interested and committed to student instruction and supervision. They work in a collegial fashion on behalf of the School of Medicine and the students; and,

8. The library, computer services, and the new simulation center are state-of-the-art, meeting the educational demands of the students for the future.

As with the LCME's request for the submission of written progress reports following the April 1993 reaccreditation, the LCME requested that the Dean of the SOM submit a progress report by March 1, 2002, addressing the following items:

1. Documentation of the comparability of clinical experiences across clerkship sites;

2. Planning and documentation of resources to support ongoing curriculum design and oversight and enhanced centralized faculty control and management of the curriculum; and,

3. Planning for facility improvements for research and education, including progress in addressing the limitations in research laboratory space, office space, and adequate space for small group instruction in the first two years.

The Dean of the SOM began initiatives to enable a timely response to the LCME's request for a progress report. In late April of 2000, the Dean met with the Curriculum Committee and charged its members to develop a plan to further enhance the process of curriculum oversight and management. This new plan was implemented at the beginning of the 2000-2001 Academic Year. The Associate Dean for Clinical Affairs was directed to develop a plan for documenting comparability of clinical experiences across clerkship sites. This task was accomplished in conjunction with the SOM clinical department chairs and hospital-based faculty. The SOM Space Review Committee developed and implemented processes for the review and assessment of space utilization. Baseline data was reviewed and recommendations were provided to improve assignment and utilization of existing space. This process, together with the additional use of Building 53 (discussed in Section I of this Edition of the USU Journal) on the grounds of the National Naval Medical Center, demonstrated the SOM's progress in addressing space utilization concerns. On April 6, 2002, the Dean, SOM, received notice from the LCME that it had "reviewed and accepted with appreciation the progress report on documentation of the comparability of clinical educational experiences across clerkship sites, planning and documentation of resources to support curriculum design oversight, enhanced centralized faculty control, management of the curriculum, and planning for facility improvements for research and education." The LCME informed USU that the next full accreditation survey is scheduled for the 2006-2007 Academic Year.

Additional Accrediting Entities Provide Quality Assurance. In addition to the University's accreditation by the Commission on Higher Education of the Middle States Association of Colleges and Schools and the SOM's accreditation by the LCME, the following professional organizations continue to authorize accreditation for the various programs and activities of the SOM: 1) the Accreditation Council for Continuing Medical Education; 2) the Council on Education for Public Health; and, 3) the American Psychological Association Committee on Accreditation. Also, SOM Steering Committees are actively involved with the accreditation process for two additional areas of responsibility reviewed by: 4) the American Association for the Accreditation of Laboratory Animal Care; and, 5) the Nuclear Regulatory Commission.

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## MILITARY UNIQUE CURRICULUM

**Large-scale terrorist attacks and biological intimidation campaigns on American soil have sent shockwaves of change rippling through every layer of society. Each unexpected new challenge requires an adjustment in preconceptions and contains a practical lesson for the future. But at USUHS, it is learning as usual. Students have been explicitly trained to provide a medical response to terrorism scenarios like the ones that are playing out in the United States and abroad today.**

- Association of American Medical Colleges, Reporter, Volume 11, Number 3, December 2001, pages 8-9.

**“One place where the physicians of tomorrow do get thorough preparation to deal with the medical aspects of chemical and biological terrorism is at the Uniformed Services University of the Health Sciences...This ‘West Point for doctors’ offers a unique grounding in military medicine, which prepares its graduates to handle real-world scenarios that most civilian doctors are ill-equipped to face, like the 1995 sarin gas attack on the Tokyo subway system...From basic studies integrated into the pharmacology and microbiology curricula, to the extensive field operations known as ‘Operation Kerkesner’ and ‘Operation Bushmaster,’ USUHS students learn how nuclear, biological, and chemical (‘NBC’ for short) agents act on the human body and what to do in the event of a suspected exposure - from detection to decontamination and medical countermeasures....the June 1998 issue of Military Medicine reported that only 19 percent of military physicians were confident about providing care in ‘NBC’ situations. The majority of those confident few - 53 percent - were USUHS graduates.”**

- Association of American Medical Colleges, Reporter, Volume 8, Number 3, December 1998, pages 1 and 6.

**General Overview.** The School of Medicine is a fully accredited medical institution which provides a year-round, four-year curriculum. This curriculum is 174 weeks in length, approximately 20 weeks longer than the average curriculum of U.S. medical schools. This expanded curriculum focuses on epidemiology, health promotion, disease prevention, tropical medicine, leadership, officership, the management of combat trauma, and combat casualty field exercises. Woven throughout the students’ entire course of study, these and other subjects focus directly on the unique requirements of career-oriented military physicians. The USU SOM military unique training includes **“approximately between 784 and 889 hours of initial military education and medical readiness training compared to that provided to the Health Professions Scholarship graduates whose training ranges from 50 to 132 hours, depending on the Service”** (General Accounting Office Report, “Military Physicians - DoD’s Medical School and Scholarship Program,” September 29, 1995, page 41).

USU represents a total military medical educational environment and acculturation process. The USU SOM provides the Military Health System (MHS) with career-oriented medical officers who possess the knowledge, skills, and attitudes essential for effective deployment during joint service operations. The SOM’s principal focus is on military medicine, which involves the prevention of disease and injury; the management of combat trauma;

health promotion; and, diagnosis and treatment by medical personnel who are integral to the military operations they support. This focus also involves the syndromes and injuries which are either rare or unknown among non-military populations. Military medicine requires a solid background in tropical medicine and hygiene, parasitology, and the use of epidemiologic methods and preventive medicine. **The SOM, for example, provides its medical students with approximately 130 hours of study in these areas, compared to about 13 hours found in the typical civilian medical school curriculum.** Additional knowledge in such areas as military medical intelligence, psychologic stresses of combat and trauma, the medical effects of nuclear, chemical, and biological weapons, and the medical effects of extreme environments - aerospace, undersea, tropical or desert conditions - is essential to a physician's ability to properly support his/her military commander's responsibility for troop fitness. Also critical to a military physician's focus is his or her ability to provide disease prevention and health promotion under austere conditions.

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## **First Year Curriculum.**

Background. Four SOM Departments, Military and Emergency Medicine, Preventive Medicine and Biometrics, Medical History, and Psychiatry share the major responsibility at USU for teaching the military unique course material, material not found in the curriculum of any other U.S. medical school. In addition to the usual first-year medical school courses, such as anatomy, physiology, biochemistry and human behavior, students at the SOM have required courses in military studies, military medical history, tropical medicine (diagnostic parasitology and medical zoology), as well as biostatistics and epidemiology, all of which utilize military data and case studies. This provides an introduction to the scope and content of military medicine and exposes each student to all of the medical systems within the Uniformed Services. Students are focused on the delivery of preventive and treatment services in the “field” or in a deployed environment.

Overview of Military Studies. The Department of Military and Emergency Medicine is responsible for teaching the military studies curriculum during the first and second years of medical school. The first course occurs during the Fall of the first year and is entitled, “Overview of Military Medicine;” it introduces the students to military medicine through lectures and small group discussions. The content of the course includes the expectations that line officers have placed on the medical corps, the distribution and classification of combat casualties, the impact of disease and nonbattle injuries on readiness, and the career patterns of the military medical officer. The remainder of this course deals with the echelon system and evolving modular concepts of battlefield health care and an introduction to the areas of chemical, biological, radiological, nuclear, and high explosive (CBRNE) warfare. During the second instructional period (Winter) of the first year, the students learn the basic skills of prehospital care in a course entitled, “Combat Medical Skills.” This portion of the curriculum exposes the students to the level of medical training of the basic medic and introduces, at an early time, those skills which must be built upon and expanded during subsequent medical training. “Military Applied Physiology” is presented during the third instructional period (Spring) of the first year. While this course parallels the traditional physiology course, it also reinforces the concept that was introduced during the Fall, that military medicine is a form of occupational/environmental medicine. **The physiologic responses to stressors common to the military environment such as cold, heat, radiation, dysbarism, altitude sickness, and exercise are presented in the context of their impact upon readiness.**

By the end of the first academic year, each student has completed course work and experiences considerably greater than those required by the Basic Medical Officer Course for any of the Uniformed Services. The first academic year spans 40 weeks of instruction within the SOM, one week of operational medicine, and five weeks of military medical field studies.

### Operation Kerkesner.

**I just returned from a ‘fantastic’ morning at Quantico observing Operation Kerkesner. I had no idea that the training had reached such a high state of sophistication... Some of my observations included the following: how integrated and well thought out the sequence and content of the training was; how those students with prior military time helped the uninitiated ones so well; how professional and competent the Marine NCO cadre was. What a powerful lesson for those students**

**to see how the NCO Corps truly is the backbone of the force; how impressed the two Thai Army officers and Japanese Naval officer were as they observed the training. USUHS no doubt is the global benchmark model; how the students praised this experience. Not one I spoke with had a negative thing to say.**

- From a Letter to the USU President dated June 25, 1999, from **Colonel Frederick J. Erdtmann, MC, USA, Hospital Commander, Walter Reed Army Medical Center.**

Between the first and second year, all students participate in the required five-week course, “Military Medical Field Studies (MMFS).” The MMFS course begins with instruction in military field skills: operating a radio, navigating the land in daylight and at night, using preventive medicine principles, and protecting oneself against CBRNE attacks. The knowledge from this block of instruction prepares the students to successfully complete a one-week leadership laboratory exercise at the Quantico Marine Corps Base. This exercise, **Operation Kerkesner** (named after a former Marine faculty member of USU), challenges the students’ ability to overcome field problems through their own initiative and team work. The field exercise focuses on small unit operations in a field environment. The class of 165 students is divided into four platoons which are further divided into eight person squads. Evaluators from the Department of Military and Emergency Medicine and platoon advisors from USU and Quantico live with the students and accompany them in all scenarios. Student leadership is rotated to place each student in a leadership position at squad or platoon level with all attendant responsibilities. The schedule includes operational scenarios which emphasize virtually all major points covered in the Military Studies I Course. Student leaders must know the medical threats (e.g., dehydration, insect-borne disease, sanitation, injury prevention, CBRNE avoidance and decontamination, physical and psychological stress) they may face and demonstrate how they would control these medical problems in their units. This course initiates the student to the field skills and small unit leadership experience required for the successful completion of Operation Bushmaster during the Military Contingency Medicine Course in the fourth year. **Operation Kerkesner** has been visited by a variety of active and reserve U.S. military medical personnel and has served as a model for the Navy’s Rapid Deployment Medical Force (RADMF) training program. Elements of the course have been used in Public Health Service Disaster Medical Assistance Team (DMAT) training. Foreign military medical personnel have also attended the course to gain material to enhance their own training programs (e.g., the United Kingdom, France, Israel, Japan, Singapore, Thailand, and Mexico).

Non-Medical Operational Assignments. The field exercise is followed by the final portion of Military Medical Field Studies. During this time, prior service students may elect to participate in research, work with a mentor, or attend a military qualification school such as: Basic Airborne Training; Basic Air Assault School; Survival, Evasion, Resistance, and Escape (SERE) School Training; Underwater Operations (SCUBA); or, Expert Field Medical Badge (EFMB). Those students without prior service experience are required to spend four weeks with an operational unit in their parent Service. Students may be afloat on a Navy ship, with a Marine Battalion, with noncommissioned officers (NCOs), or with other junior officers learning the military occupational environment and developing a non-medical perspective on military medicine. Coordinators at each site report on the students’ performance to the Department of Military and Emergency Medicine; and, each student produces a daily log and a written report detailing his/her experience and lessons learned. During this same period, twenty-five to thirty-five percent of each class will elect and successfully complete, one of the military qualification schools listed above.

Special Programs in Operational Medicine Offered by the Casualty Care Research Center. The Casualty Care Research Center (CCRC) is a division of the SOM Department of Military and Emergency Medicine. The CCRC, created in July of 1989, is staffed by military and civilian physicians and scientists. **The center provides USU medical students and other medical personnel disciplined training and research experiences in combat casualty care, medical counterterrorism, injury epidemiology, trauma management and other related areas.** USU's medical students attend the CCRC programs either as an elective during their fourth year or as part of their summer experience between the first and second years of medical school.

During 2001, students between their first and second year of medical school, selected an area of interest and worked with CCRC faculty members on individualized courses of research and study. The students were also divided into groups; each group was responsible for completing a research effort and for a presentation of findings. Students attended one or more of the following CCRC training opportunities:

1. Emergency Medical Technician-Tactical (EMT-T) Course. The EMT-T course was developed to provide relevant training to medical providers who work within the law enforcement special operations community. Topics in the EMT-T program include: clandestine drug laboratory raids; emergency medical care in barricade situations; care under fire; forensic science during patient care; medical operations, planning and medical intelligence; wounding effects of weapons and booby traps; special medical gear for tactical operations; personal protective gear; special needs for extended operations; preventive medicine; and, injury control;

2. Emergency Medical Technician - Tactical Advanced Course. The Tactical Advanced Course includes the following topics: advanced technology applications in the remote assessment methodology; legal concepts and moot court; individual health care concepts; concepts in crisis intervention; sleep/wake cycle management; emerging issues in chemical restraint; operational dermatology; management of training injuries; nutrition and fitness for tactical teams; and, less lethal weapons systems.

3. Weapons of Mass Destruction (WMD) Training Program. The Center offers a variety of training programs in the area of WMD to include: Out-of-Hospital Response Training; and, a Health Care Facilities Course. Topics of instruction include: identifying potential Chemical-Biological-Radiological-Nuclear (CBRN) devices; threat recognition and evaluation; formulating a building response/evacuation plan; the role of quarantine and isolating exposed individuals; psychological effects of a WMD incident; and, principles of hasty decontamination.

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## **Second Year Curriculum.**

Extensive Hours of Preventive Medicine Training. During the second year, besides pathology, microbiology, pharmacology, ethics, human behavior, introduction to clinical medicine and physical diagnosis, students have additional hours of preventive medicine, including an introduction to operational (field) preventive medicine; health promotion in the military; physical fitness programs, policies, and implementation strategies; environmental and occupational health; and, health services administration.

On October 3, 2001, the Dean, SOM, issued a revised policy directing that all second year medical students must certify as Basic Life Support (BLS) providers at the "C" level. The certification is in effect for two years and is provided during the sophomore year to maintain certification through May of the senior year. The Department of Military and Emergency Medicine schedules BLS certification sessions for the second year students; students may elect to certify through officially approved off-campus courses under the auspices of the American Heart Association or the American Red Cross. These courses must be at the "C" level, also known as the health care provider level; students must be certified prior to the beginning of their third year clerkships.

Military Studies. The second year course in military studies, conducted by the Department of Military and Emergency Medicine, focuses on two general areas: the science base for the practice of military medicine (wound ballistics, extensive background on conventional and unconventional weapons effects, toxic hazards, and psychological stress) and the command and staff functions of military medicine in Joint Commands (medical planning, medical logistics, medical evacuation systems, and blood programs).

The second academic year spans 35 weeks of instruction within the SOM. After final examinations, students prepare for the U.S. Medical Licensing Examination (USMLE) Step 1, which is the first of three examinations in the process of becoming a licensed physician. The current second year class completed the computer-based testing (CBT) for the USMLE, Step 1, between May and June of 2001, prior to beginning the first rotation of their third year. The Office of Student Affairs reported that 91 percent of the USU students in the Class of 2003 passed the examination on their first attempt. The national average percentage pass for 2001 was 90 percent.

Second Year Medical Ethics Course. The second year, Medical Ethics Course: Ethical, Legal and Social Issues in Medicine was initiated during the Summer of 1977. The course, taken by all medical students, was also presented during 2001 to the Nursing Anesthesia students from the USU Graduate School of Nursing. The course includes extensive material directly related to military medicine including the special concerns with sending soldiers back to combat, treatment of prisoners and civilians, and limitations imposed by the Geneva Conventions. Other material stresses the resolution of hospital-based ethical problems in federal institutions. A wide range of speakers is annually provided during the course: **Gordon Livingston**, a local psychiatrist and West Point Graduate, shares lessons learned during the Vietnam Conflict; **Robert Leitch**, a British nurse with extensive combat experience, describes future conflicts such as those already faced by military health care providers in regard to the extent of medical resources that should be offered when providing humanitarian care; **Craig Llewellyn**, Professor and Director, Center for Humanitarian and Assistance Medicine (CDHAM), Department of Military and Emergency Medicine, summarizes the discussions by suggesting what the students should retain from the differing views

presented during the course. There are four issues which all USU students address: 1) Military Medical Triage. The students learn that the practice of military medical triage sometimes departs from traditional civilian medical procedures; rather, the top priority may be to further the military mission. The students discuss how the varying priorities may be necessary to save extensive lives, both military and civilian; 2) Captured Enemy Service Persons. The USU students learn that if the captured enemy is ill or injured, he/she is to be regarded as a patient. There is no option for physicians or any service persons to mistreat prisoners or to treat them “less equally” for revenge or military gain; 3) Exploitation of Vulnerable Patients. In this session, the students learn that in medicine, physicians should never exploit vulnerable patients for military gain; and, 4) Self-Incriminating Information. In this final area, students are instructed that the two primary tasks of military physicians are to keep their patients healthy and to provide commanders with accurate information regarding the health of their patients. Over 150 faculty from USUHS, NNMC, and WRAMC led discussions on these and other issues with small groups of students. The final lecture, during both 1999 and 2000, was given by **Patricia Heberer**, an historian at the Holocaust Museum; the students learn that all physicians are susceptible to immoral behavior and that they must avoid the mistakes of the past.

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### **Third Year Curriculum.**

Overview. The third year curriculum consists of clerkships in the principal specialties of medicine. Much of the instruction is provided by uniformed clinical faculty with an emphasis on teaching the special military relevance of the various clinical experiences. Of special note are the military clinical settings for instruction (military tertiary medical centers, military community hospitals, military outpatient ambulatory care clinics, and troop dispensaries on active military bases) and the patient population which includes active duty personnel presenting diseases and injuries incurred during both training and combat deployments.

As a part of their training and work during their clerkships, USU SOM third (and fourth year students) provide hundreds of thousands of hours of patient care related services in the MHS hospitals during each calendar year. Such services include: examination of patients; providing post-operative care; organization and maintenance of the completion of the medical history and physical examinations of patients; assistance at surgery and the delivery of newborns; and, updating progress notes in patient records. These services, performed by USU medical students in a supervised setting, provide necessary and important support in the provision of quality medical care to the men, women, and children receiving treatment throughout the MHS.

All SOM departments are providing a clinical experience within the ambulatory setting. The ambulatory services of all departments have grown significantly within the past seven years. The Department of Medicine has taken the lead and devoted extensive resources to the planning, development, and implementation of a comprehensive ambulatory teaching experience. The department's program and its faculty have become nationally recognized for accomplishments in this area; a number of publications in peer-reviewed journals and presentations have resulted.

Clerkships Represent the Entire Spectrum of the MHS. USU medical students complete their third and fourth year clinical clerkships at 20 military hospitals, representing the entire spectrum of the Military Health System (MHS). The third year class of approximately 165 students has eight required clinical clerkship rotations of six weeks each, for a total of 1,320 third year rotations: Family Practice (six weeks); Obstetrics/Gynecology (six weeks); Pediatrics (six weeks); Psychiatry (six weeks); Internal Medicine (two six-week sessions); and, Surgery (two six-week sessions). Five of the USU SOM academic departments - Medicine, Surgery, Obstetrics and Gynecology, Pediatrics, and Psychiatry - use the Walter Reed Army Medical Center and the National Naval Medical Center as major clinical instructional sites.

The University has reevaluated and updated the affiliation agreements with its major teaching affiliates. This has further defined the relationship between the SOM and its 20 clinical sites to ensure that clear routes of communication exist and areas of mutual interest are appropriately defined and addressed. The Associate Dean for Clinical Affairs provides oversight for relationships and interactions between the SOM and its clinical teaching sites. Issues of concern from all parties can now be readily addressed as changes in the military health care delivery system are put into place.

The following teaching hospitals have established affiliation agreements with the USU SOM: 1) **U.S. Army - (9)** Walter Reed Army Medical Center, Washington, D.C.; Brooke Army Medical Center, San Antonio, Texas; Tripler Army Medical Center, Hawaii; Madigan Army Medical Center, Tacoma, Washington; Dewitt Army Community Hospital, Fort Belvoir, Virginia; Martin Army Community Hospital, Fort Benning, Georgia;

Darnall Army Community Hospital, Fort Hood, Texas; Womack Army Community Hospital, Fort Bragg, North Carolina; Eisenhower Army Medical Center, Fort Gordon, Georgia; 2) **U.S. Navy - (5)** National Naval Medical Center, Bethesda, Maryland; Naval Hospital, Portsmouth, Virginia; Naval Hospital, San Diego, California; Naval Hospital, Jacksonville, Florida; Naval Hospital, Pensacola, Florida; and, 3) **U.S. Air Force - (6)** Malcolm Grow Medical Center, Andrews Air Force Base, Maryland; Wilford Hall Medical Center, Lackland, Texas; USAF Medical Center, Wright Patterson Air Force Base, Ohio; USAF Medical Center, Keesler Air Force Base; David Grant Medical Center, Travis Air Force Base, California; and, Eglin Air Force Base, Florida.

The Department of Obstetrics and Gynecology Successfully Utilizes Standardized Patients to Assure Mastery of Required Knowledge, Skills, and Professional Behaviors. Educators in Obstetrics and Gynecology and accreditation bodies have been concerned that a medical student may complete a required core clinical clerkship without the assurance of the mastery of essential clinical skills or the demonstration of the essential components of professionalism. The SOM Department of Obstetrics and Gynecology initiated a program of assessment utilizing standardized patients (trained actor-patients) in an Objective Structured Clinical Exam (OSCE) format with one-on-one faculty supervision at the end of each core six-week clinical clerkship. These sessions are conducted at USU's Medical Simulation Center for clerkships in the National Capital Area; and, sessions are provided in the Obstetrics and Gynecology Clinics located at the integrated Wilford Hall USAF Medical Center in Lackland, Texas, the Brooke Army Medical Center in San Antonio, Texas, and at the Tripler Army Medical Center in Hawaii. As other clinical programs have done, the Department can now assure that the students have been observed correctly performing techniques. The following procedures are performed utilizing standardized patients during the clerkship: the clinical breast examination; the speculum pelvic examination; the bimanual pelvic examination; an interview of the adolescent gynecologic patient; and, an interview of the menopausal patient. Another innovation, during 2001, was the provision of direct, on-the-spot feedback to the medical students from the standardized patients and the faculty supervisors both at the conclusion of each of the essential techniques, or procedures, listed above, and following the final examination sessions. The standardized patients and faculty reinforce the skills and also provide guidance for improvement. Feedback from the students has been extremely positive; they understand the importance of being able to exhibit the required skills and behaviors; and, they particularly appreciate the immediate guidance and the opportunity to improve their performance of these essential skills. As a consequence, this clerkship experience leaves a permanent impression on the students which eventually benefits their future patients in subsequent clinical encounters.

An Innovative Clinical Clerkship Management Tool Utilizing Palm-Type, Hand-Held Computer Devices. The Department of Obstetrics and Gynecology has also initiated the development and implementation of an innovative clinical clerkship management tool utilizing palm-type, hand-held computer devices for medical student performance evaluations. During 2000 through 2001, the residents in the USU, NNMC, and WRAMC-sponsored Uniformed Services Residency in Obstetrics and Gynecology Program utilized a hand-held device operating system application which was developed by faculty in the USU Department to establish a cumulative data base encompassing the residents' individual patient care management experiences. On a weekly basis, each resident downloads his or her data to the main department computer through a "HotSync" function. This allows the program director to have timely, on-going access to the experiences of all of the residents. The positive impact of this program was recently published in the peer-reviewed premier journal, *Obstetrics and Gynecology*, and was showcased in a special session at the Annual Meeting of the Council on Resident Education in Obstetrics and

Gynecology in March of 2001. Since the residents are the primary teaching interface with the USU medical students, a new program has been developed in the SOM Department so that the residents can enter their assessments of the performance of the USU medical students who are rotating on their respective services. When the residents download their own patient care experiences on a weekly basis, their evaluations of the USU medical students are automatically downloaded as well. The Clinical Clerkship Director then has ready access to the progress of all of the medical students in a format which is automatically updated each week. The results of this pilot project were reported at the National Faculty Development Workshop conducted by the Association of Professors of Gynecology and Obstetrics in January of 2001. As the program is further developed, it will be implemented at all clerkship sites (Brooke Army Medical Center, Fort Belvoir Army Hospital, the National Naval Medical Center, Tripler Army Medical Center, the Walter Reed Army Medical Center, and the Wilford Hall USAF Medical Center). Data for all students in the Department of Obstetrics and Gynecology is downloaded weekly through a secure Internet site so that the Clerkship Coordinator can monitor the progress of all students at all sites. This process helped USU to meet the LCME requirements for uniform experience and assessment for all USU medical students across all sites.

Pediatric Clinical Rotation - Exceptional Family Member Program. Third year medical students on their pediatric clinical rotation receive a new perspective on family care; the rotation sends the students directly into the homes of parents who have children with special needs or disabilities. Every six weeks, a new group of USU students visit homes on an individual basis, integrating into the family for about two hours and learning about life with a special-needs child. The parents are the teachers in the non-clinical, interactive environment. USU works with the Bethesda-based Institute for Family-Centered Care to provide the training. The Institute recruits, trains, and supports parents to serve as faculty and advisors for the project. The parents develop a list of capabilities and behaviors for the students which goes beyond their basic medical knowledge. These include self-awareness, good communication, decision-making skills, and a professional attitude. These are competencies which the parents feel characterize outstanding physicians. Medical conditions of the children include seizure disorders, Downs Syndrome, cerebral palsy, cystic fibrosis, leukemia, juvenile rheumatoid arthritis, and severe multiple disabilities. The children range in age from pre-school to adolescence. Prior to their visit, the students are assisted in forming self-directed learning goals; afterward, the students write a one-page paper about the strengths which they saw in the child and family and their own emotional reaction to the visit. The USU students are provided essential lessons about the capacity of families and the role of the physician.

Pediatric Cardiology Module - Cardiac Auscultation at the Simulation Center. Beginning in 2000 and continuing throughout 2001, an innovative case-based, interactive scenario in pediatric cardiology was introduced into the third-year medical student pediatric clerkship through the advanced technologies of the National Capital Area Medical Simulation Center. This teaching module is an interactive session between the instructor and medical students with discussions on the events of the cardiac cycle and a demonstration on their relationship to heart sounds and murmurs in the normal child as compared to the child with congenital heart disease. Interactive discussion is facilitated by the instructor and covers the following topics: 1) the electrical and mechanical events in the cardiac cycle; 2) the four common functional murmurs; 3) a short overview of congenital heart disease; 4) the normal cardiac auscultation of the child; and, 5) the abnormal clinical findings as illustrated by the more common congenital cardiac defects. The instructor's presentation is supported by slide presentations and the use of computer software. The demonstration of heart sounds and murmurs is based on a CD-ROM which contains audio files of actual pediatric cardiac sounds as well as other visual resources which are available to the instructor

and to each of the students at his/her individual work station. The teaching objective is for the student to recognize the normal clinical findings in the cardiovascular examination of the child and to differentiate between physiologic and pathologic sounds and murmurs. A pre-test is given at the beginning of the session; each student is tested on the heart sounds and murmurs provided by the computer software program. The teaching module is expected to complement the clinical experience during the clerkship and to help develop physical diagnosis skills; a post-test is given at the end of the six week clerkship to evaluate the progress of the individual student. This educational experience was presented at the National Meeting of the Council on Medical Student Education in Pediatrics in San Diego in March of 2001. The USU SOM Pediatric Education Section presented a poster entitled, "Utilizing a case-based interactive learning module incorporating CD-ROM-based technology to optimize the teaching of cardiac auscultation skills in the pediatric clerkship." The poster presentation was well received by the attendees.

Patient Simulation Laboratory - A Collaborative Effort.

**On April 10, 2001, and June 12, 2001, we brought 8 registered nurse students to your anesthesia simulation laboratory for realistic and invaluable advanced cardiac life support training. The experience our students receive in your lab is consistently of the highest caliber and a highlight of their training. As usual, their evaluations of the experience were outstanding. I appreciate the learning opportunity your patient simulation laboratory affords our students. My wish is to continue the collaborative relationship we have established with your staff to provide exceptional simulator training for future Critical Care Nursing Course students.**

- **Karen M. Whitman, MS, RN, CS, Major, U.S. Army Nurse Corps, Director, WRAMC Critical Care Nursing Course, letter dated June 28, 2001.**

A collaborative project between the National Naval Medical Center's Department of Anesthesiology and two USU SOM Departments, Anesthesiology and Anatomy, Physiology, and Genetics, led to the development, in 1997, of a fully interactive medical training laboratory at USU: the Patient Simulation Laboratory (PSL). As mannequin-based simulation was new not only to USU, but also quite rare, in general, throughout the world of medical education, almost every program offered by the USU PSL was developed and implemented by the USU PSL staff. The PSL has been in daily use since its first course offering. The greatest advantage that patient simulation brings to medical education is the ability to schedule disasters so that the students can gain familiarity with managing resources in times of crisis.

The patient simulator, located in the USU SOM Department of Anesthesiology, is being used to train four primary groups: medical students, graduate nurses, anesthesia residents, and students of the crisis and consequence management of weapons of mass destruction and terrorism. In addition, there are TriService post-graduate military medical readiness groups: The Army Medical Center and School from the Walter Reed Army Medical Center (WRAMC), the Air Force Critical Care Air Transport Teams (CCATT) from the Malcolm Grow Medical Center (MGMC), and USNS COMFORT clinical staff from the National Naval Medical Center (NNMC).

USU SOM students, during their third-year anesthesia rotation, are instructed in the basic fundamentals of anesthesia and the role of the anesthesiologist in surgery. They learn to connect a patient to external life support sources, such as an oxygen mask, a ventilator, or manual ventilation via endotracheal intubation. For the first time, USU medical students combine the lessons learned about the physiology of gas exchange and physiologic and pharmacologic responses while actually performing the procedures and administering anesthesia, without putting a patient, or themselves, at risk.

The PSL has six mannequins which span the range of ages from newborn to adult, both male and female. The simulators are designed with more than 20 patient profiles, each with unique characteristics, including cardiovascular, pulmonary, and metabolic attributes. There are more than 35 customizable “events” ranging from anaphylaxis to ventricular fibrillation which can be assigned to the simulated “patients.” Instructors are able to select the type, severity, and speed of a case and tailor it to match the ability of the student; the instructor can then assess the clinical judgment, decision-making, and performance levels of the student. A lesson can be “paused” to provide the instructor the opportunity to give the student feedback; and, clinical situations can be repeated until the desired level of performance is achieved. The mannequins (simulators) can present a number of various medical problems and altered physiological states. A certain scenario may incorporate any number of characteristics and complications including difficult airway management, cardiovascular conditions, allergic reactions, problems with equipment set-up, and equipment failure. **The simulators present scenarios applicable to combat casualty care, anesthesia, critical care, trauma, and emergency medicine.** The simulators are designed with automatic drug recognition systems, which create realistic responses to model drug compounds administered to the mannequins. Each syringe is equipped with a unique computer chip which represents a specific drug. Drug models include intravenous and inhaled anesthetics, neuromuscular blockers, cardiovascular agents, and a wide range of infusion pharmaceuticals which affect the simulators as they would human patients.

The SOM has completed its fourth year of teaching the first-year SOM students a simulated cardiovascular reflex scenario as part of their Physiology Course; each year, the SOM students have expressed strong enthusiasm for this simulation presentation. The simulated patient definitely adds a clinical context to some of the physiological and pharmacological principles presented to both the medical and nursing students. In addition, to these hands-on small group (8 students) simulations, the PSL provides live, interactive distance education presentations to the second-year SOM students for illustrating simulated, clinical examples during their Pharmacology lectures. Thus, the PSL brings the hospital to the students through a newly installed Advanced Distance Education Network (ADEN), which was designed by the PSL staff.

The USU SOM Departments such as Military and Emergency Medicine, Pharmacology, Biochemistry and Molecular Biology, Microbiology and Immunology, and Pathology offer classes focusing on the effects of chemical agents and radiation and biowarfare agents. One such course is the Scientific, Domestic and International Policy Challenges of Weapons of Mass Destruction and Terror: Part I; the instructor, **Aileen Marty, CDR, MC, USN, Associate Professor, USU SOM Department of Pathology**, is a recognized expert in emerging infections and pathology. The course, first offered during 2000, provides an understanding of the medical features and medical countermeasures for living agents or organic products which could potentially be used in warfare, terrorism, or criminal activities in the context of the political implications of such weapons of mass destruction. Also incorporated into the course is a hands-on training phase conducted in the PSL; the simulator’s real strength is that medical disasters can be scheduled and students can practice repetitively until they gain familiarity, competence, and poise with the unexpected. In conjunction with Commander Marty’s course, the PSL has produced inhalational

anthrax and marine toxin exposure scenarios, with another scenario featuring smallpox currently in development. The pneumonic plague scenario is also played out in the PSL, placing the students in a real-life situation. Part II of the CDR Marty's course, first offered during 2001, focuses on nuclear, radiological, high explosives, chemical agents, and unusual weapons and it is also acted out in the laboratory. These realistic exercises result in the class members reaching out to others and forming teams to solve problems; they provide experience with almost every facet of a response to a biological or chemical terrorism event.

Simulation Center Introduction to Surgery Rotation. The advanced technologies of the National Capital Area Medical Simulation Center are being used in simultaneous fashion every six weeks to introduce the third year medical students to their surgery rotations. The students are provided both an introductory discussion and a lecture regarding an abdominal surgery laboratory to be held the following day. The patient actors are used to provide an hour-long, three-patient opportunity to elicit, from the medical students, a medical history; and, the patient actors enable the medical students to perform a focused physical examination for a variety of acute abdominal diseases (e.g., appendicitis, pancreatitis, gallbladder disease, ectopic pregnancy, and others). These encounters are videotaped and the tapes are reviewed with the teaching surgeon during the subsequent hour. A suturing and knot-tying laboratory is held in the computer laboratory using both web-based and senior surgeon instruction. Plastic mechanical models (Laerdal/MPL) are used to teach such skills as endotracheal intubation, chest tube insertion, and surgical airway. The human patient simulator (MEDSIM) is used to teach the best approach to simple clinical problems such as hypotension or hypoxemia. The virtual reality laboratory experience includes starting an IV (HT Medical), creating an anastomosis (BDI), and performing bronchoscopy (HT Medical). Two additional simulators are used to teach emergency trauma procedures: pericardiocentesis and diagnostic peritoneal lavage. These last two trauma skills simulator technologies were developed at the National Capital Area Medical Simulation Center (SimCen - see Section I, pages 73-77).

Through the use of this multi-modality facility, the SimCen, the experience of medical students can be enhanced so that the first time some of the above-described problems or procedures are encountered, it will not be with a live patient, but rather with the most appropriate simulator. Approaches, such as those provided by the advanced technologies of the Simulation Center, are expected to minimize the possibility of medical errors.

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## **Fourth Year Curriculum.**

**Yours is the only medical school in America which trains physicians to be ready for duty on the bottom of the ocean or on the surface of the Moon, and any place in between...As students, you went through one of the most rigorous programs in the country... You prepared yourself to treat patients anywhere in the world, under any circumstances.**

- **President Ronald Reagan**, Commencement Address, SOM Class of 1987.

Overview. The fourth academic year begins with a one week Military Preventive Medicine Course. Early in the fourth year, approximately 165 students also take the USMLE Step 2. The 165 fourth year students have ten four-week blocks for 1,650 rotations. Students must complete an eight week subinternship as well as the following four-week clerkships: Military Contingency Medicine, Military Emergency Medicine, and Neurology. The senior year concludes with a one-week Transition to Residency Course.

Military Medicine. The Department of Military and Emergency Medicine conducts two courses in the senior year which are required for graduation from the SOM. Although separate in time, they are closely coordinated. For years, Military Contingency Medicine (MCM) has focused on medicine in a deployed environment and in response to a terrorist attack. The first two weeks of the course are currently devoted to reviewing and expanding basic concepts and manual skills learned in the first two years of Military Studies. While Combat Medical Skills included first-aid at the medic level for the first year medical students, the Advanced Trauma Life Support (ATLS) course is taught at the physician level to the fourth year students. The USU SOM is one of only three U.S. medical schools which require ATLS for all of their students. Additional topics in the first two weeks include the management of combat trauma, chemical-biological-radiological (CBR) exposure, environmental injuries, and combat stress. Special sections focus on triage, women's issues, and working with non-governmental organizations in disaster relief or humanitarian assistance missions. Integration with national strategic goals, operational missions, and tactical objectives is emphasized in all aspects of the course. The third week of MCM is dedicated to Operation Bushmaster (see next paragraph) so that didactic lessons can be applied in multiple simulated situations during a field training exercise. The fourth week continues student education in military medicine and begins the transition into hospital-based emergency medicine. Students review basic and learn advanced life support interventions during this period; these two and one half days also prepare the SOM students to excel in a four-week clerkship entitled Military Emergency Medicine (MEM).

Operation Bushmaster. This field training exercise uses the constructs of three Battalion Aid Stations and one Forward Support Medical Company to allow students to practice skills learned in MCM and throughout the military and "traditional" SOM curriculum. Because of the need to educate students from all Services, these treatment facilities are designed to represent generic first- and second-echelon levels of care. Real-world modular teams, such as the Air Force's Mobile Field Surgical Teams, have been integrated into the scenarios. Army companies have provided frontline ambulances, UH-60 Blackhawk helicopters, and medical personnel to give students experience with medical evacuation procedures. The overall scenario was changed this year from a Major Theater War to a peace enforcing Operation Other Than War in a Joint Task Force environment, in order to

reflect recent trends in military deployments of the last decade. Students are evaluated on: medical care provided to dozens of simulated casualties; leadership skills under demanding and stressful conditions; mission focus; and, overall teamwork.

Emergency Medicine Clerkship. Unlike most medical schools in the United States, the USU SOM requires all students to complete a clinical clerkship in emergency medicine prior to their graduation as physicians. Lectures, case studies, and advanced life-support skills in the last two and one half days of MCM prepare students to work in one of 18 emergency departments around the country. The primary goal of this educational opportunity is to allow students to learn the initial approach to patients of all ages for whom a diagnosis is not already known or narrowed down to a short list of possibilities. Students gain clinical experience evaluating patients of all ages with undifferentiated complaints and often unknown severity. Under the on-site supervision of practicing emergency physicians, USU SOM students evaluate acute presentations of common injuries and illnesses, devise management plans, and formulate disposition decisions within a variety of health care systems. Each Year, approximately three to four students from each Service (five to six percent of each class) choose emergency medicine as a career specialty.

Operational Electives. The Department of Military and Emergency Medicine, through its Education Division or one of its three centers, sponsors several electives in operational medicine. These may include clinical rotations in military emergency departments or aerospace medicine clinics, enrollment in military courses, or attendance at the Joint Readiness Training Center. Qualification as a flight surgeon may be obtained through either the U.S. Air Force School of Aerospace Medicine or the U.S. Army School of Aviation Medicine; during this last year, the Army School altered the timing and structure of their course specifically to enable USU SOM students better access to this form of occupational medicine. Whereas only one student had attended in the previous two years, five students and one faculty member attended during 2001; four of those six were the top four graduates of the demanding six-week Army course. Nine students plan to attend during 2002. Additionally, three students were sponsored by the Center for Disaster and Humanitarian Assistance Medicine to accompany an Air Force unit on a humanitarian mission to El Salvador. And, two students planned on working in a trauma center in Armenia before their graduation in 2002.

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**USU SOM Curriculum Stresses a Military Focus.** In addition to the military unique curriculum described above, the USU SOM academic departments and faculty have structured **all of their courses to include: topics specific to military medicine and not covered in the traditional medical school curriculum; and, teaching examples and cases drawn from military medicine.** This content focus is reinforced by the fact that many of the faculty (one third of the billeted basic science faculty and two-thirds of the clinical faculty) are uniformed officers representing the Army, Navy, Air Force, and the Public Health Service; these uniformed instructors provide experience and contextual correlations during their teaching of traditional topics. **The unique practice of military medicine is woven throughout the four years of medical school.**

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## **Curriculum Renewal.**

Background. The SOM curriculum utilizes a variety of educational experiences and learning formats, including lecture, laboratory, clinical correlation, small group discussion, computer and web-based experiences, patient simulator, standardized patients, and experiential exercises. The SOM vision for the undergraduate curriculum is that the science of today is taught in an environment which will foster increased long-term, self-directed learning tomorrow. Toward this end, the SOM Curriculum Committee completed an exhaustive study of the undergraduate curriculum and revisions are on-going to minimize the traditional curricular “stovepipes” through course integration and the increased use of clinical material.

In both the first and second years, there is a heavy emphasis on small group learning. In the first year, this takes the form of laboratories in Anatomy and Physiology and discussion groups in Human Context. Additionally, the Introduction to Clinical Medicine Course starts in the first year and begins to develop history-taking and physical diagnosis skills. In the second year, laboratories continue in Pathology and Microbiology, while there is increased use of a small group problem-based learning educational format. In both Pathology and Clinical Concepts, groups of 8 to 12 students team with a faculty member to review clinical scenarios. The format of these encounters is designed to flow seamlessly into the second year portion of the Introduction to Clinical Medicine Course and the clerkships during the third year.

The Renewal Process. As the Chief Academic Officer of the SOM, the Dean is responsible for institutionalized curriculum management. Policy issues are reviewed and considered by a standing Curriculum Committee which reports to the Dean. Institutionalized curriculum renewal in the SOM has been a high priority in recent years. The formalized process began with Phase I (1993-1995) of curriculum renewal. During Phase I, a steering committee with four subcommittees was developed to cover the following areas: 1) the history of medical education in the United States; 2) current experiments in curriculum reform; 3) curriculum at the USU SOM; and, 4) professional requirements and outcomes. Subcommittee reports and recommendations were produced and reviewed by the faculty. The Dean’s Office and the relevant academic departments then offered recommendations on how to best implement the committee’s recommendations and, subsequently, they were charged to implement those recommendations.

During Phase II (1996-1997), a steering committee and five subcommittees were established to review or complete the following: 1) objectives and/or goals; 2) an organizational template for curriculum management; 3) basic science and intra-departmental and clinical integration; 4) the clinical clerkships, both required and elective; and, 5) outcomes and evaluation. Topic groups were established and the subcommittee and topic group reports and recommendations were reviewed by the steering committee, relevant academic departments, and the Dean. A consensus on the recommendations and plans for implementation was reached; and, the recommendations were implemented.

Phase III began in February of 1998 (and continues to the present time). The Dean charged the Curriculum Committee with reviewing the December 1997 Curriculum Review Report produced during Phase II of the curriculum renewal process. The Curriculum Committee was also charged with providing oversight for the planning process and the development of an implementation plan for curriculum renewal. This implementation plan is envisioned as an evolutionary process, with changes in the curriculum occurring in an incremental fashion. The Curriculum Committee completed a draft of SOM educational objectives, which was reviewed by the Dean

and distributed to faculty, students, and staff for comment, and finalized in 1998. The current draft of the curriculum renewal implementation plan includes five major areas of focus: 1) the development of educational objectives and the further integration of military medicine topics into the general curriculum; 2) content coordination, integration, and presentation; before the renewal process was initiated, the SOM curriculum was a traditional two years of basic science and two years of clinical science program; currently, the basic and clinical science content is on the way toward integration across the four year program; 3) the use of computers in academics; 4) outcome measures; and, 5) faculty development. In order to facilitate this intensive process and to diminish the natural anxiety which results from change, the Dean held town meetings, directed the establishment of a web site for the distribution of information and discussion of issues, involved representatives from all academic departments, established topic groups to review curriculum content, and directed student involvement at all levels. As changes to the curriculum occur, the Dean has also directed that his office establish and monitor processes for student, faculty, and TriService evaluation of the curriculum changes.

There are numerous examples of clinical medicine being integrated into the basic science experience. Close collaboration between the Departments of Radiology and Nuclear Medicine and Anatomy led to the development of computer-based learning resources correlating basic anatomy with the radiological representation of normal and pathologic states. The Medical Physiology Course (which is closely integrated with Anatomy) has a long-established tradition of incorporating clinical faculty into the course. Several areas in particular - cardiovascular, renal, and pulmonary - have demonstrated extensive clinical integration for many years. As part of Phase III, all course and clerkship directors were asked to review the current SOM objectives and to establish consistency between objectives at the individual course/clerkship level and the institutional level. A master grid was developed by the standing Curriculum Committee to facilitate the review of the curriculum for any gaps in content and to determine the adequacy of methods for assessment of student performance. Educational objectives were used to revise the military medicine portions of the curriculum and to guide the coordination of topics in the Anatomy and Physiology Courses. There were several initiatives considered during 1999-2000 to move more of the basic science to the clinical years.

SOM Executive Committee on Curriculum. On August 2, 2001, the SOM Dean issued a Policy Memorandum updating the responsibilities of the USU SOM Executive Committee on Curriculum (ECC). The twelve members of the ECC have been designated with responsibility in seven areas to: 1) articulate, with the concurrence of the Office of the Dean, well-defined learning objectives which each student must meet to receive the M.D. Degree; 2) conduct a biennial review of each required course/clerkship in the SOM undergraduate curriculum, including content, format, teaching methods, course materials and methods for verifying that graduating students have met all learning objectives; 3) establish a prospective course/clerkship review schedule which gives course/clerkship directors sufficient time for proper consultation and preparation before the biennial review; 4) complete the course/clerkship review and assessment within 60 days of submission and presentation by the course/clerkship director, including submission of findings and recommendations to the Office of the Dean; 5) request, if necessary, through the Office of the Dean, further information, seek consultation with faculty or external consultants, and, when appropriate, sponsor symposia on curriculum to assist course/clerkship directors or topic group leaders in curricular planning or improvement; 6) periodically review institutional policy concerning the curriculum and educational practices to ensure consistency in the implementation and management of the undergraduate medical education program; and, 7) address other curricular issues and educational initiatives as charged by the Dean, SOM. The Department Chairs are responsible for establishing objectives, designing content and presenting each course/clerkship assigned to his/her department and for assuring that the performance of

students is evaluated in an appropriate and timely manner and in accordance with institutional policy. The Chairs are also responsible for supporting course/clerkship directors with requisite faculty and specifically for assigning teaching responsibilities to faculty members and for allocating departmental resources as required to support the courses, clerkships, selectives, and electives assigned to their departments. Course or Clerkship directors for departmental-sponsored courses will be appointed by the responsible Chair; course or clerkship directors for interdepartmental courses will be appointed by the Dean, SOM. Faculty members are the content experts in the individual basic science and clinical science disciplines and collectively are responsible for the SOM curriculum. The processes of curricular design, implementation and evaluation must involve broad participation by the SOM faculty both at the departmental level and at the institutional level. Every assigned faculty member is responsible, generally in coordination with the course or clerkship directors, for fulfilling his/her assigned teaching responsibilities in the areas of undergraduate curriculum.

Center for the Enhancement of Healthcare Training and Outcomes. The USU SOM Departments of Medical and Clinical Psychology and Family Medicine have developed a biopsychosocial training program for medical students and residents, nursing students, clinical/medical psychologists, prospective health care professionals, and faculty. The mission of the Center for the Enhancement of Healthcare Training and Outcomes (CEHTO) is to: 1) infuse concepts and processes into existing curricula in order to advance a biopsychosocial philosophy, improve cultural proficiency, and maximize health care outcomes; 2) provide a forum in which students have the opportunity to practice the skills and strategies addressed in the classroom; 3) facilitate the development of culturally respectful relationships - inside and outside of the USU community; and, 4) evaluate the impact of CEHTO and to continuously improve and refine the training provided. Fundamentally, CEHTO is designed to teach students, residents, and health care professionals how to maximize their effectiveness. Its ultimate aim is to train providers to use a wide knowledge base, interpersonal skills, technology, and cultural awareness to effect the most beneficial treatment plans for patients. With customized training modules, CEHTO participants also receive training to help them better manage themselves (i.e., personal stress management, cultural awareness, interpersonal sensitivity) and others (i.e., resolving conflict or dealing with severe physical or mental illness). As a component of the Family Medicine Clerkship curriculum, for example, medical students receive experiential training. Via facilitated conversations, small and large group exercises, and multi-media presentations, they learn about how cultural factors affect them, their patients, and their interactions with others. Experiences such as these foster an appreciation of cultural diversity, the patients' mental health needs, and how our own beliefs and biases can impact patient care. Most important, this training gives students the opportunity to consider, rehearse, and evaluate specific strategies to deal most effectively with diverse multi-cultural populations. Hands-on, experiential training modules utilize standardized patients (patient actors) at the USU Medical Simulation Center. Using realistic behavioral simulations, this state-of-the-art medical simulation center provides a unique forum in which participants can practice, develop, and refine new skills, and translate increased cultural awareness into culturally proficient behaviors. Detailed feedback is provided and individualized behavioral prescriptions are generated to assist participants in setting objective goals for improvement.

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**Departmental Review.** A program was adopted by the School of Medicine in 1998 which mandated each department to conduct a “self-study” every five years or at the time of the appointment of a new chairperson. The self-study would be followed with a review of the self-study by a group of “peers” from outside of the University. From 1999 through 2001, self-studies and external reviews have been completed by the Departments of Dermatology, Family Medicine, Military and Emergency Medicine, Obstetrics and Gynecology, Neurology, and Surgery. Other departmental reviews pending completion include: Anesthesiology; Anatomy, Physiology and Genetics; and, Radiology and Nuclear Medicine. The results of these studies will be used to chart future courses for these departments in education, research, and community service.

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## **STUDENT AFFAIRS**

**Class of 2005.** During August of 2001, the School of Medicine (SOM) matriculated its twenty-sixth class (the Class of 2005). 1,765 applicants representing all 50 states competed for 165 positions. There were approximately 11 applicants for each position which allowed a diverse and highly qualified selection of candidates with a motivation toward public service. The Class of 2005 includes 63 Army, 51 Navy, and 51 Air Force medical students. In addition, 2 United States Public Health students were added to the class. The demographics of the class are depicted as follows:

- Sixty-eight students (41 percent) were associated in some way with the military before USU matriculation. Of those,
  - Seventeen students served previously as officers; thirteen had previously served as enlisted personnel; eighteen were service academy graduates; fifteen were direct graduates of ROTC programs; and, five were reservists.
- Fifty-five students (33 percent) are women.
- Thirty-nine class members (23 percent) are minority students (including 12 students from groups classified as underrepresented by the Association of American Medical Colleges).
- The average age of the entrants at the time of application was 24 years.

All members of the Class of 2005 hold Baccalaureate Degrees; twenty-one students hold Master of Science Degrees; and, one holds a Doctorate in Veterinary Medicine. Biology was the most represented undergraduate major of the matriculants (33 percent); eleven percent of the class had majors in chemistry; and, eight percent had majors in biochemistry. Some of the other disciplines in which members of the Class of 2005 hold degrees are economics, history, microbiology, nursing, physical education, physics, and zoology.

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**The Office of Student Affairs.** Throughout Fiscal Year 2001, the Office of Student Affairs (OSA) was engaged in personal and/or professional academic counseling and career guidance for the 668 students in the SOM. Beginning in September of each year, OSA conducts well over 300 formal interviews. In 2001, this process formally began with the post-matriculation interviews of all 167 freshmen from the first year class.

Structured Interviews for the First Year Class. The purpose of the MS-I (medical student-first year) interview is to engage each new medical student in a relationship with the OSA and the office staff who will manage their professional development and career guidance. The interview is open with an emphasis on the future partnership (or the individual management and consulting network) which will exist between each student and the three deans in OSA. The interview covers five areas: 1) Transition - the move to Washington, e.g., housing, getting settled, family issues; 2) Sense of Membership in the Class, e.g., within and between Services, professional, social; 3) Sense of Professional Vision, e.g., vision for what will come after medical school;

4) Adjustment to Student Life, e.g., how are they managing the 24 hour clock; 5) Inquiry about Image, e.g., aside from roles of student, spouse, parent, athlete, what really defines them? Students are free to raise any questions, concerns, or thoughts. The interviews require considerable time, but have definitely proven to be worth the effort for both the students and OSA. These interviews set the stage for an on-going dialogue with each student over the four years of medical school and for establishing a sense of community throughout the student body.

Sponsor Program. In January of 2001, OSA allocated sponsor assignments for the newly accepted students in the Class of 2005. Upon acceptance to USU, members of the incoming class are individually matched with members of the current freshman class. First-year students serve as the incoming students' sponsors; the student sponsor answers questions about housing, moving to Washington, family issues, military summer training, and many other topics. The student-sponsor relationship has proven to be a valuable tool in assisting the incoming students through matriculation.

USMLE Step 1 Preparation. During Fiscal Year 2001, OSA prepared the second-year students for the United States Medical Licensing Examination (USMLE) Step 1 Board Examination which the students took between May and June 2001, prior to beginning their first of the third-year clinical rotations. In 1999, the USMLE introduced computer-based testing for the Step 1 and 2 examinations. During 2001, OSA provided class-wide presentations covering the fundamentals of the examination process, test preparation strategies, and test taking skills. Students also organized their own informal program which included mini-lectures on broad relevant topics, meetings with select faculty, and group study sessions. The USU first-time pass average was 91 percent (the national first-time pass average for 2001 was 90 percent).

Third-Year Clerkship Scheduling. Also during February, OSA met with the second-year students to schedule their third-year clerkships. To increase student input into the orchestration of their third-year clerkship schedule, OSA has moved from a system where students were simply given a pre-selected schedule of randomly assigned clerkships. The student now has the ability to place rotations of special interest in the first half of his/her junior year and the opportunity to experience potential career choices at an early point. In addition, the current system allows students to coordinate some of the required travel in their academic third year with personal events which may already be planned or anticipated. The staff of OSA conducted Round 1 clerkship selections for the Class of 2003 using randomly assigned numbers. During the second week of February, students met as a group and picked rotations for the remaining rounds. The students shared equally in opportunities for assignments of choice and expressed their appreciation for the process.

Graduate Medical Education Planning Interviews. OSA conducts interviews with the third-year medical students during the fall term. During the first few months of 2001, OSA met individually with members of the junior class to conduct fourth-year planning. The hour-long meetings covered Graduate Medical Education (GME) planning, specialty choice, interviews, and specific sequencing of senior rotations to maximize the selection of their residency of choice; again, available selections for senior-year rotations exceeded the general expectations of the students. OSA arranged program schedules which enhanced student growth, professional experience, and individual preferences. A major product of this process is the Dean's Letter, which presents a comprehensive

picture of each student's strengths. Selection for GME positions is competitive; OSA and students worked together to create the best nomination packages possible.

Graduate Medical Education Selection Board. The Joint Service Selection Board convened during the week of November 26 - 30, 2001; and, 166 USUHS seniors (the Class of 2002) were selected for PGY-1 positions: Army - 65; Navy - 51; Air Force - 50. The overall selection rate for FIRST CHOICE programs was 80 percent. USU had 132 out of 166 students match for first choice both in specialty and training site. Fourteen additional students of the Class of 2002 received their first choice in specialty, resulting in 88 percent (146 out of 166) receiving their first choice in specialty. **Approximately half of the class (49 percent) was selected for training in a primary care specialty.** 82 seniors will begin their residency training during this Summer in the following areas: Family Medicine - 27; Internal Medicine - 27; Pediatrics - 17; and, Obstetrics and Gynecology - 11. The directors of the MHS military programs once again demonstrated confidence in the USU SOM graduates.

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**The USU Military Medical Student Association.** The Military Medical Student Association (MMSA), a quad-service, student-run organization, originated at USU more than twelve years ago. MMSA's goals include developing lines of communication among military medical students nationwide, providing information, and promoting morale and unity among future military medical officers.

Unlike USU medical Students, the Health Professions Scholarship Program (HPSP) students attend universities in the civilian sector; they receive tuition and books and are paid a monthly stipend while working toward their medical degrees. The HPSP students receive limited military training and influence while attending the civilian schools. To share their unique military training, MMSA has sponsored conferences where residency directors and medical specialty representatives from around the country, and USU staff and faculty members present lectures and hold discussions on various topics, including service specific issues, military medical history, operational considerations of military medicine, and basic military concerns which affect both USU and HPSP medical students. The USU MMSA has also established the MMSA Journal which provides valuable military information of interest to medical students; the MMSA goal is to make copies of the journal available to all HPSP students.

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**USU Students Appointed on Liaison Panels.** Among all of the medical students in the United States and Canada, the Association of American Medical Colleges (AAMC) chose two USU SOM students to represent medical students on a pair of key panels during 2001, two prestigious assignments. **Ensign David Brett-Major**, a fourth-year medical student, was chosen to represent the AAMC as the student member on the Liaison Committee on Medical Education (LCME). His one-year term began on July 1, 2001. **Ensign Sean McBride**, a third-year medical student, was appointed by the Administrative Board of the AAMC to serve as the student liaison to the Committee on Admissions. Founded in 1876, the AAMC comprises the 125 accredited U.S. medical schools, 16 accredited Canadian medical schools, 400 major teaching hospitals and health systems, 90 academic and professional societies representing nearly 100,000 faculty members, and the Nation's health through the

advancement of medical schools and teaching hospitals. The AAMC and its members set a national agenda for medical education, biomedical research, and health care. The association also works to strengthen the quality of medical education and training and knowledge, to advance research in the health sciences, and to integrate education into the provision of effective health care.

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## ACHIEVEMENTS OF THE SOM ALUMNI

**There is no better place for me to be than USUHS. What we are learning right now is applicable to what is occurring in the world.**

- **Leah Strobel, 2nd Lieutenant, United States Army, USU SOM Freshman Class, Association of American Medical Colleges, Reporter, Volume 11, Number 3, December 2001, page 9.**

**I deployed to the Gulf very early, August 11, 1990, as a senior medical officer with the Air Force Special Operations Command. Deployed in this capacity, my responsibilities ranged from flying training and combat support missions to representing my command at theater-level planning conferences...**

**The heat in August was incredible, with temperatures up to 125 degrees. Yet our maintenance personnel had to work around the clock to get our aircraft combat ready. Just sleeping six hours in the heat caused dehydration to the point of dizziness. Our medical team was on the flight line and around our tent-city bringing sunscreen and ice water to the personnel because they could not drink 100 degree water out of a canteen.**

**My training at USUHS had prepared me for working in austere conditions without fixed facilities. The tap water in our camp became contaminated by the sewer system, and water tanks had to be provided with chlorine levels monitored daily. Because of the military medical history classes I had at USUHS, I knew that disease and non-battle injuries could make an army ineffective before the battle began. Preventive medicine is an entire department and course of study at USUHS. I had the training and references... to avoid repeating the mistakes of previous wars... Because of the emphasis on tropical medicine at USUHS, I was able to advise the Commander and troops about potential infections and how to protect themselves... Because we studied the air evacuation system and did practice exercises using it at USUHS, I was able to coordinate a unique mini-mobile aeromedical staging facility at our intermediate operating base. This provided the transition from our helicopter rescue aircraft to the C-130 medical evacuation system.**

**As our troop build-up progressed, hospitals from each Service increased. Because at USUHS I had been taught the organization of medical systems in the other Services, I was able to arrange referrals for our patients much more easily... We had no logisticians, but were able to obtain supplies through the Army depot system which I also learned about at USUHS.**

**Another area of major concern for our personnel was chemical warfare. Because of the thorough preparation and field training I had as a student at USUHS, I was able to develop a training program in unconventional warfare, such as chemical and biological threats, which increased confidence and decreased anxiety in our troops...**

**When we deployed to our forward locations, there were no designated disaster preparedness personnel. The USUHS experience came in handy again, as I assumed those responsibilities.**

**A plan for decontaminating aircraft, vehicles, and personnel was created. Materials were purchased and positioned to maximize readiness.**

**To summarize the impact of the 4-year immersion in military medicine at USUHS on my preparation for war, I appreciated the operational mission of my unit and how I, as a medical officer, fit into the process of planning and executing that mission. This went well beyond treating patients. It involved analyzing the tactical situation, advising the Commander, and integrating with other Services. USUHS graduates were well prepared.**

- Testimony by **Lieutenant Colonel Charles Beadling, USAF (USU Class of 1984, currently at the Rank of O-6)**, Hearings before the Senate Appropriations Sub-Committee on Defense, April 14, 1994, page 95.

**General Overview.** The graduating Class of 2001 was the twenty-second class to receive Medical Degrees from USU. As of April 2002, of the total 3,101 medical school graduates, 2,561 remain on active duty in the Uniformed Services (Army - 1,000; Navy - 737; Air Force - 728; USPHS - 96) and represent over 21 percent of the total physician force in the Department of Defense - 11,833 physicians. USU graduates have a seven-year obligation which only begins after they complete their three-plus years of residency training. This obligation is exclusive of any other service obligations they may have already incurred, such as graduation from one of the Service Academies. After twenty-two graduations, data is now available to document that the USU SOM graduates are meeting, or surpassing, the goals established by the founders of USU. Since the first graduation in 1980 to April of 2002, the overall retention rate for USU graduates is 85 percent (Congress had originally envisioned retention rates close to 70 percent). The average USU physician graduate serves at least 18.5 years. An example of the critical role of USU graduates in the MHS was reported during February of 2001 when the Center for Navy Analysis (CNA) provided data on medical retention to the Navy Surgeon General for use in his responses to the Senate Appropriations Committee. The Navy Surgeon General informed the Congressional Committee that his most undermanned specialties were general surgery and all surgical subspecialties, orthopedic surgery, diagnostic radiology, anesthesiology, and urology. Many of these specialties are critical wartime specialties and shortfalls could have a negative impact on medical readiness. Overall, the median length of non-obligated service for physician specialists averages only 4.4 years. That average drops to 2.9 years when USU graduates are excluded; the median length of non-obligated service as a specialist for USU graduates is 9 years.

In just a short timeframe, USU graduates have become well respected in their medical specialties, and have become the core leadership in areas of military medicine ranging from special operations and hospitals, to the White House and Kosovo deployments, and to assignments aboard ships at sea, the NASA Johnson Space Center, with the Blue Angels, and in the Congress. Following the terrorist attacks on September 11, 2001, USU graduates were strongly represented among the medical relief workers at the World Trade Center and at the Pentagon; they led the efforts to identify remains at the Dover Port Mortuary; and, USU graduates assisted in directing the Nation's medical response in the wake of the anthrax attacks. Other alumni are engaged in patient care or research in military hospitals and clinics around the world, administering to active duty officers and enlisted personnel, retirees, and family members. Currently, 14 of the 58 Specialty Consultants to the Army Surgeon General are USU graduates; 9 of the 45 Specialty Consultants to the Navy Surgeon General are USU

graduates; and, 18 of the 58 Specialty Consultants to the Air Force Surgeon General are USU graduates. USU graduates are, and continue to provide, a strong cadre of leaders who ensure the continuity of military medicine.

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**School of Medicine Recognized by the American Academy of Family Physicians.** In keeping with its long-standing tradition, the Department of Family Medicine once more received a Family Practice Percentage Award from the American Academy of Family Physicians. The award recognizes medical schools for their success in making family practice a top career choice for graduating medical students. A total of 26 medical schools received the Year 2001 award which recognizes the highest three-year average of graduates entering family practice residency training programs from 1998 through 2000. The USU SOM received a Bronze Percentage Award for a three-year average of 21.8 percent. In addition, the Family Medicine Interest Group in the USU SOM Department of Family Medicine was named a 2001-2002 Program of Excellence by the American Academy of Family Physicians. The group received formal recognition at the Academy's national conference in Kansas City during July of 2001. The Chair of Family Medicine reported that "this was undoubtedly the result of the energy, enthusiasm and commitment of USU students and the wonderful vision and dedication of their advisor, **Lieutenant Commander, Mark Stephens, MC, USN.** Also during 2001, **2nd Lieutenant Chris Bunt, USAF, Second-Year Medical Student,** was named a regional coordinator for Family Medicine Interest Groups (FMIGs). He is responsible for overseeing the activities of FMIGs at medical schools in Maryland, Virginia, West Virginia, and Delaware. The FMIG is the student member organization of the Uniformed Services Academy of Family Physicians, a state chapter of the American Academy of Family Physicians.

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**Second USU Alumni Is Promoted to O-7.** USU's second flag officer, **Brigadier General Charles "Bill" Fox, MC, USA, USU Class of 1981,** is now triple-hatted as the Corps Surgeon for the XVII Airborne Corps, Commander of the 44th Medical Command, and Director of Health Services at Fort Bragg, North Carolina.

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#### **USU Alumni Earn Promotions to O-6.**

##### USU Army Graduates Selected for Promotion to Colonel - 2001.

Sixty-four percent of the USU SOM graduates who were eligible for promotion to Colonel were on the Army's promotion list during 2001; a rate twice as large as that of their peers. The University had 36 alumni eligible for promotion; 23 were selected. For non-USU SOM graduates, 50 of 157 were selected for a promotion rate of 32 percent.

USU Navy Captain Promotion Selectees - 2001.

The Navy released the promotion list for Captain (O-6), Medical Corps in the first quarter of 2001. Again, USU graduates were selected at a rate higher than their peers. In all, twenty-one USU alumni were selected for promotion to Captain, U.S. Navy, during Fiscal Year 2001. These alumni represent the USU Classes from 1983 through 1989.

USU Air Force Graduates Selected for Promotion to Colonel - 2001.

Of the USU SOM graduates considered for promotion to U.S. Air Force Colonel, 13 were selected during 2001.

U.S. Public Health Service Graduates Selected for Promotion to Captain - 2001.

The U.S. Public Health Service promoted two USU graduates to Captain during Fiscal Year 2001.

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**USU SOM Graduates Hold Leadership Roles and Earn Special Recognition throughout the Uniformed Services - Selected Examples from the USU SOM Alumni.**

**Class of 1980.**

**Colonel Howard Heiman, MC, USA**, assumed the position of Chief of the Neonatal Service at the Wilford Hall Medical Center in late 1999 and continues in that assignment. Among his most notable achievements is the development of the first modern aeromedical neonatal transport system for the Department of Defense, for which he set the national standards, and authored a chapter and technical review. He has received the Best Resident Teaching Award two times, the Army Surgeon General's "A" Proficiency Designator, and is currently the Consultant to the Army Surgeon General for Neonatology.

**Class of 1981.**

**Colonel Kevin Keenan, MC, USA**, is currently serving as the Dean of the Joint Special Operations Medical Training Center at Fort Bragg, North Carolina.

**Captain Scott R. Lillibridge, M.D., USPHS**, was chosen to lead the Department of Health and Human Services (HHS) Coordinated Bioterrorism Initiative in July of 2001. Before he was appointed as a Special

Assistant by Secretary Tommy G. Thompson, he served as the Director of the Bioterrorism Preparedness and Response Program at the Centers of Disease Control (CDC) and Prevention in Atlanta, Georgia. Captain Lillibridge has worked in 14 nations on epidemiology and other public health issues; he has three books in press and has authored or co-authored 25 publications on bioterrorism and various other public health issues.

**Colonel Ann Norwood, MC, USA, Associate Professor and Associate Chair of the USU SOM Department of Psychiatry**, gave a presentation on psychological reactions to bioterrorism at the Conference on Medical and Public Health Aspects of Bioterrorism on June 27, 2001, at the Johns Hopkins University School of Public Health. The conference was co-sponsored by the Memorial Institute for the Prevention of Terrorism in Oklahoma City, Oklahoma. Following the terrorist attacks on September 11, 2001, Colonel Norwood has been actively working with the American Psychiatric Association to assist the areas impacted by the attacks.

### **Class of 1982.**

**Colonel Jim Geiling, MC, USA**, is assigned as the Commander of the Tri-Service DiLorenzo Tricare Health Clinic in the Pentagon. Several months prior to September 11, 2001, Colonel Geiling had conducted mass casualty training exercises in conjunction with the Pentagon Flight Clinic. The exercise simulated a plane crashing into the building; members of both clinics, following September 11th, agreed that the simulated training exercise has proven to be invaluable. When Colonel Geiling, who had been at the Walter Reed Army Medical Center during the terrorist attack on the Pentagon, found all access back to the Pentagon blocked, his well-trained staff moved into action as when he led them during their simulated exercises.

**Colonel Karl Kerchief, MC, USA**, assumed command of Reynolds Army Community Hospital, Fort Sill, Oklahoma, on July 25, 2001. Colonel Kerchief was previously assigned to Martin Army Community Hospital at Fort Benning, Georgia.

**Colonel David Orman, MC, USA**, is the Psychiatry Consultant to the Surgeon General of the Army. He is mentioned in a February Army News Service article, "Soldiers, Leaders and Communities Saving Lives," featuring the Service's new suicide prevention plan. The story focuses on training people how to recognize early signs of suicidal behavior and how to intervene; Colonel Orman is interviewed on the relationship between stress and suicide.

**Colonel Carole Ortenzo, MC, USA**, moved from the position of Chief, Department of Surgery, at the Martin Army Community Hospital (MACH) located at Fort Benning, Georgia, to the position of Deputy Commander for Clinical Services, also located at MACH.

**Colonel Alton Powell, USAF, MC**, currently assigned to the hospital at Sheppard Air Force Base, Texas, will command the 341st Medical Group, Malmstrom Air Force Base, Montana.

**Colonel Lawrence Riddles, USAF, MC**, currently assigned as the Surgical Operations Squadron Commander at the 81st Medical Group, Keesler Air Force Base, Mississippi, will assume command of the 5th Medical Group, Minot Air Force Base, North Dakota.

### Class of 1983.

**Colonel Cliff Cloonan, MC, USA, is currently serving as the Interim Chair of the Department of Military and Emergency Medicine at the USU SOM.** Colonel Cloonan was assigned to USU in July of 2000 where he served as the Vice-Chair of the Department until August of 2001, when Craig Llewellyn, M.D., Colonel, USA (retired), stepped down as the Department Chair of Military and Emergency Medicine. Colonel Cloonan had previously served as the Dean of the Joint Special Operations Medical Training Center at Fort Bragg, North Carolina, for three and one half years. From 1990 through 1993, Colonel Cloonan served in the USU SOM Department of Military and Emergency Medicine as an Assistant Professor; he was also the Course Director for both the Combat Medical Skills Course and the Introduction to Combat Casualty Care Course. Currently, in addition to serving as Interim Chair, Colonel Cloonan continues to serve as the current Emergency Medicine Specialty Consultant to the Army Surgeon General.

**Colonel Warner “Rocky” Farr, MC, USA,** is the Command Surgeon for the U.S. Army Special Operations Command at Fort Bragg, North Carolina.

**Colonel Bradley Harper, MC, USA,** is now the Chief of Pathology and Acting Deputy Commander for Clinical Services at the Irwin Army Community Hospital, located at Fort Riley, Kansas. Colonel Harper recently transferred from Fort Lee, Virginia, where he served as Commander of the Kenner Army Community Hospital. Recently, Colonel Harper was presented with the Order of Military Medical Merit, an honorary award given only to members of the Army Medical Department. Army Major General Harold Timboe, Commander, North Atlantic Health Services System, nominated Colonel Harper for the award. The award is a reflection of Colonel Harper’s many years of exemplary service.

**Colonel Lenora Williams Shaw, MC, USA,** is the Chief of the Department of Surgery and Gynecological Services at the Moncrief Army Community Hospital located at Fort Jackson, South Carolina.

**Captain Kevin Yeskey, M.D., USPHS, FACEP, Associate Professor, Department of Military and Emergency Medicine** is currently the Director of the Bioterrorism Preparedness and Response Program for the Centers for Disease Control (CDC) in Atlanta, Georgia. Captain Yeskey was named as the Acting Director of this program on August 20, 2001; and, he was selected as the Director on December 1, 2001. As the Director, he is charged with enhancing CDC’s capacities to assist States and other partners in responding to bioterrorism. In addition to infectious disease concerns, other CDC efforts under this program include consideration for chemical terrorism, a National Pharmaceutical Stockpile, and National Lab Enhancement.

### Class of 1984.

**Colonel Charles Beadling, USAF, MC,** was selected to command the 375th Medical Group, Scott Air Force Base, Illinois; his assignment will begin during the Summer of 2002. Beadling is currently the Commander of the 95th Medical Group, Edwards Air Force Base, California.

**Lieutenant Colonel Tom Knuth, MC, USA**, is the Director of the Army Trauma Training Center at the University of Miami (Florida) Ryder Trauma Center. The Center was a TriService entity at Baylor University prior to its transfer to the University of Miami. Lieutenant Colonel Knuth is a trauma surgeon and was previously assigned to Blanchfield Army Community Hospital, Fort Campbell, Kentucky.

**Class of 1985.**

**Captain Philip Coyne, M.D., USPHS**, was selected as the Associate Director for Regulatory Affairs in the Division of Experimental Therapeutics at the Walter Reed Army Institute of Research in Silver Spring, Maryland. He is focusing primarily on new antimalarial drug development. His responsibilities continue to include work with the Department of Health and Human Services on broader pharmaceutical access issues and the expansion of his clinical workload to teach medical residents and infectious disease fellows at both the National Naval Medical Center and at the Walter Reed Army Medical Center, as well as medical students at USU.

**Lieutenant Colonel (P) Loren Erickson, MC, USA**, was selected to command the U.S. Army Center for Health Promotion and Preventive Medicine-Europe in 2003.

**Lieutenant Colonel Bryan Funke, USAF, MC**, left his position as the Commander of the 325th Aeromedical Squadron, at the Tyndall Air Force Base in Florida, to take over as Commander of the 14th Medical Group at Columbus Air Force Base in Mississippi.

**Commander Douglas Knittel, MC, USN**, is a forensic pathologist assigned to the Naval Medical Center in Portsmouth, Virginia. He is also one of only six U.S. regional Armed Forces medical examiners. After contacting the Armed Forces Institute of Pathology (AFIP), within 24 hours of the attack on the Pentagon, Commander Knittel was in Washington, D.C. He assembled as many uniformed pathologists and other specialists as possible to assist in the task of identifying those killed during the attack. A team of more than 50 AFIP staff members, including Commander Knittel, met at the Port Mortuary located at the Dover Air Force Base, Delaware. The staff worked 14 hour days for an average of two weeks at a time. Along with FBI latent print experts, Commander Knittel and the AFIP staff fingerprinted the victims, examined dental records, and collected DNA specimens.

**Lieutenant Colonel Doug Liening, MC, USA**, recently left his operational position as the Division Surgeon for the 82nd Airborne Division at Fort Bragg, North Carolina, to assume the position of Deputy Corps Surgeon for the 18th Airborne Corps also located at Fort Bragg.

**Commander Eric McDonald, MC, USN**, recently left his position as the Division Surgeon with the 1st Marine Division at Camp Pendleton, California, for an assignment in the Emergency Medicine Department at the Naval Medical Center in San Diego, California.

**Commander Michael Maddox, MC, USN**, is currently serving as the Division Surgeon for the 3rd Marine Division in Okinawa, Japan. In June of 2002, he will transfer to the Otolaryngology Department at the U.S. Naval Hospital in Okinawa.

### **Class of 1986.**

**Commander Bruce Baker, MC, USN**, an anesthesiologist, recently returned from an assignment at Forward Operating Base, Camp Rhino, in Afghanistan, providing medical support for the U.S. troops in the region. Commander Baker reports that he assisted in the operation of a “Shock Trauma Platoon” and a two-bed surgical suite.

**Colonel Rhonda Cornum, MC, USA**, was featured in a special double issue of U.S. News and World Report, “Real Heroes: 20 men and women who risked it all to make a difference.” The article pointed out Colonel Cornum’s heroic service during the Gulf War when she was captured by the Iraqi army. The story explained how Colonel Cornum’s stalwart conduct helped reshape the debate on women in the military. The possibility of capture was often cited to keep women out of combat; Colonel Cornum’s experience led to the opening of many combat posts to women. Colonel Cornum was recently selected to serve as the Commander of the 28th Combat Support Hospital.

**Lieutenant Colonel Clifford Porter, MC, USA**, is on the staff of the General Surgery Service at the Madigan Army Medical Center in Tacoma, Washington. He is also the Commander of the 250th Forward Surgical Team (Airborne); and, during 2001 was selected for promotion to Colonel.

**Lieutenant Colonel Andrew Satin, USAF, MC**, is the Director of the Uniformed Services Residency in Obstetrics and Gynecology and the Vice Chair of the USU SOM Department of Obstetrics and Gynecology. The residency program was recently granted the maximum five-year accreditation by the Obstetrics and Gynecology (OBG) Residency Review Committee of the Accreditation Council for Graduate Medical Education. The residency program is the first in OBG to move from provisional status as a newly integrated program directly to the maximum accreditation of five years. It is a fully integrated program under the institutional sponsorship of the National Capital Consortium based at the National Naval Medical Center and the Walter Reed Army Medical Center. Of the more than 250 OBG residency programs in the United States, only nine have achieved the five-year maximum accreditation.

### **Class of 1987.**

**Captain Tom Grieger, MC, USN, Associate Professor, USU SOM Department of Psychiatry**, was in charge of the Navy Special Psychiatric Rapid Intervention (SPRINT) Team helping out at the Pentagon and the Navy Annex following the terrorist attacks on September 11, 2001. The team provided supportive services to 2,000 active duty and civilian employees on the Navy staff.

**Colonel Bryon Hepburn, USAF, MC**, was directly involved with the medical evacuation and treatment of the wounded sailors following the attack on the USS Cole. During the Winter of 2001, Colonel Hepburn, the Senior Flight Surgeon for the evacuation mission, joined in a subsequent review of that response for possible improvements. He visited USU on October 26, 2001, to brief the USU SOM students on the medivac operations.

**Colonel Timothy Jex, USAF, MC**, is serving as the United States Central Air Force (USCENTAF) Command Surgeon, based at Shaw Air Force Base, South Carolina. Colonel Jex is responsible for the medical planning at USCENTAF. He also manages medical war readiness materials for the USCENTAF, provides

supervision, establishes policy, works logistics issues for all of the deployed medical units, handles all medical issues for the Central Air Force Combat Command, and generally provides leadership for all of the deployed medical personnel. Colonel Jex was also deployed to Afghanistan during 2001.

**Lieutenant Colonel Edward Lucci, MC, USA**, is the Chief of Emergency and Operational Medicine at the Walter Reed Army Medical Center (WRAMC). He was the first emergency physician to arrive on the scene after terrorists crashed American Airlines Flight 77 into the Pentagon. Amid reports that a second strike was coming, Lucci remained at the site from 10:15 a.m. until 1:00 a.m. on September 12th. Lieutenant Colonel Lucci estimated that more than 100 patients needed medical treatment, about 15 of whom were in critical condition. Once the situation with patients was under control, medical personnel turned their efforts to helping rescue workers. The First Lady came to WRAMC on September 12th, and met with Lucci and the other members of his team. On staff at WRAMC since 1997, Lucci serves as the hospital's team leader for the special response team for chemical and biological events. He was also interviewed by U.S. News and World Report (special edition) and a program which was broadcast on the PBS Network.

**Lieutenant Colonel Paul Mongan, MC, USA**, was selected as the Chair of the USU SOM Department of Anesthesiology. He is the first medical school alumnus to become a Chair of a clinical department at the University. Lieutenant Colonel Mongan has been an Anesthesiology faculty member since 1997, serving as Director of Research, Associate Professor, and since 1999, as Vice Chair. He succeeded Sheila Muldoon, M.D., who remains on the faculty as a Professor of Anesthesiology.

#### **Class of 1988.**

**Lieutenant Colonel Michael C. Edwards, USAF, MC, FACS**, currently holds dual positions as Chief of Surgical Services and Chief of the Professional Staff at the 99th Medical Group/Mike O'Callaghan Federal Hospital, Nellis Air Force Base, Nevada.

**Lieutenant Colonel Kondi Wong, USAF, MC**, received the 2000 John Hill Brinton Award at the Armed Forces Institute of Pathology (AFIP) 16th Annual James Earle Ash Lecture in Washington, D.C. He won the award as the primary author of the article, "Foamy Cells with Oligodendroglial Phenotype in Childhood Ataxia with Diffuse Cerebral Hypomyelination Syndrome (CACH)." The award, named for the first curator of the Army Medical Museum, is given to a junior staff member selected by the AFIP Scientific Advisory Board. Lieutenant Colonel Wong is the Chief of the AFIP Division of Neuromuscular Pathology.

#### **Class of 1989.**

**Colonel John Baxter, USAF, MC**, has served as the Commander of the Pentagon Flight Medicine Clinic for some years; he is also the physician to the Secretary of Defense. On September 11, Colonel Baxter and his staff were conducting morning clinic, when the terrorists attacked the Pentagon. Upon hearing shouts for evacuation, Colonel Baxter and his physicians, nurses, and technicians immediately grabbed emergency trauma supply bags and ran towards the TriService DiLorenzo Tricare Health Clinic, the designated emergency rendezvous

site. Directed toward the fifth corridor of the Pentagon, they found an injured officer and searched for his co-workers. Despite warnings of another approaching plane, Colonel Baxter and his staff hurried further into the smoke-filled corridors searching for injured personnel. As they discovered an injured woman, they heard warnings of an inbound plane, two minutes away; they picked up the patient and ran to a pre-determined triage site, where Colonel Baxter and his staff joined the DiLorenzo Clinic staff in treating patients with burns, inhalation, and blast injuries. Several months prior to the terrorist attack, Colonel Baxter's clinic had conducted mass casualty training exercises in conjunction with the DiLorenzo Clinic. The exercise simulated a plane crashing into the building; on September 11th, members of both health care facilities agreed that the simulated training had proven to be invaluable.

**Major Lisa Desvigne, USAF, MC**, is a plastic surgery fellow at the Wilford Hall USAF Medical Center at Lackland Air Force Base, Texas. During 2001, Major Desvigne was part of a nine-member plastic surgery team which performed life-changing surgeries for indigent Honduran families at the Santa Teresa Public Health Hospital in Comayagua. The surgeons and anesthesiologists screened more than 80 patients and selected 30 for surgery; Army and Air Force teams have been providing such services for 17 years, to include maintaining records on their patients and performing follow-up surgeries as appropriate.

#### **Class of 1990.**

**Lieutenant Colonel Bruce Adams, MC, USA**, is currently serving as the Chief Resident, Department of Emergency Medicine, at the Medical College of Georgia in Augusta, Georgia. Lieutenant Colonel Adams recently spoke to the USU students in a USU SOM Military and Emergency Medicine Department Course on his experiences in Somalia.

#### **Class of 1991.**

**Lieutenant Commander Michael Harrison, MC, USN**, an anesthesiologist, recently served at the Forward Operating Base, Camp Rhino, in Afghanistan.

**Commander Karen Parko, M.D., USPHS**, is the Chief of Neurology Services for the Northern Navajo Medical Center in Shiprock, New Mexico. She is also the sole neurologist for the Indian Health Service in the lower 48 United States. Commander Parko frequently travels to other service units on the Navajo reservation to help with neurology services and to educate other physicians in the care of neurological problems and she has also established specialty seizure and Parkinson's clinics for the area patients. Commander Parko runs a neuro-diagnostic laboratory and performs nerve conduction studies and electromyography, as well as electroencephalograms. Dr. Parko has pointed out that her experience at USU provided her with a good overview of medicine and how it can be applied in different settings; the wide scope of medicine taught at the USU SOM has left her prepared to handle multiple medical situations outside of her specialty. Commander Parko's responsibilities also include administrative committee work in addition to serving as a neurology tort claim reviewer for the Public Health Service.

**Major Paul Pasquina, MC, USA**, has been selected as the Program Director for the Physical Medicine and Rehabilitation Residency at the Walter Reed Army Medical Center. Major Pasquina recently led the department

through its residency review by the Accreditation Council for Graduate Medical Education (ACGME). Formal results will be released during 2002.

**Lieutenant Colonel Bill Rice, MC, USA**, completed the U.S. Army Command and General Staff College Program in Leavenworth, Kansas. He is currently serving as the Director of Occupational Medicine, at the U.S. Army Center for Health Promotion and Preventive Medicine-Europe in Heidelberg, Germany.

**Commander Scott Sherman, MC, USN**, is currently assigned to the Naval Environmental and Preventive Medicine Unit 5 in San Diego, California. He previously served as a preventive medicine officer at Camp Pendleton, California.

### **Class of 1992.**

**Lieutenant Colonel Erin Edgar, MC, USA**, has continued the trend of USU alumni serving in operational positions, when he assumed the position of Division Surgeon for the 82nd Airborne Division at Fort Bragg, North Carolina. Lieutenant Colonel Edgar has been twice promoted below zone.

**Lieutenant Colonel Nelson Hager, MC, USA**, left his assignment at the Madigan Army Medical Center in Tacoma, Washington, to assume the position of Chief of the Physical Medicine and Rehabilitation Service at the Walter Reed Army Medical Center in Washington, D.C.

**Lieutenant Colonel Mark Koeniger, USAF, MC**, recipient of the Malcolm Grow Award for Air Force Flight Surgeon of the Year in 1998, has returned from an assignment in Japan to serve as the Commander of the 86th Aeromedical Squadron at the Ramstein Air Base in Germany.

**Commander Mary Porvaznik, M.D., USPHS**, is the Chief of Family Medicine at the Northern Navajo Medical Center in Shiprock, New Mexico. She supervises a department of 13 physicians who provide primary care in the Medical Center and in several community clinics outside of the Center. Besides a busy out-patient clinic, Commander Porvaznik's department also runs a busy in-patient adult and pediatric service, including an intensive care unit and full obstetrical services. Commander Porvaznik was born in the Indian Health Service Hospital in Tuba City, Arizona; her father was a physician who also served the Native American population. Commander Porvaznik's father, who completed 30 years in the Public Health Service and retired as an Assistant Surgeon General and Rear Admiral, suggested that she apply to USU. Commander Porvaznik reported that she realizes the intense training she received at the USU SOM was outstanding and the summer field training sessions were incredibly useful.

### **Class of 1993.**

**Major John Andrus, USAF, MC**, received the Malcolm Grow Award, during 2001, for his selection as the Air Force Flight Surgeon of the Year for 2000. Assigned to the 37th Airlift Squadron, Ramstein Air Base, Germany, Major Andrus is the fifth USU graduate to receive the Malcolm Grow Award. The Society of U.S. Air Force Flight Surgeons established the award in 1961 to recognize an individual thought to exemplify the ideal flight surgeon at the operational level. Selection is based on exceptionally effective support of a flying organization

and superior rapport with flying personnel. Among his other accomplishments, Major Andrus has also been honored for his work as the only flight doctor on the evacuation mission which brought 28 injured sailors to Ramstein following the USS Cole bombing in Yemen and for his work during separate medical missions to South Africa and Romania.

**Lieutenant Commander John Lyszezarz, MC, USN**, a member of the Navy Special Psychiatric Rapid Intervention (SPRINT) Team, assisted at the Pentagon and the Navy Annex following the terrorist attacks on September 11, 2001; the team provided supportive services to 2,000 active duty and civilian employees on the Navy staff.

**Major Grant Tibbetts, MC, USAF**, transferred from the F.E. Warren Air Force Base in Wyoming to his current assignment as Chief of Special Imaging at the 3rd Medical Group, Elmendorf Air Force Base, Alaska.

#### **Class of 1994.**

**Major Daniel Dirnberger, USAF, MC**, is a staff neonatologist assigned to the U.S. Naval Hospital in Okinawa, Japan. Major Dirnberger is also an Assistant Professor in the USU SOM Department of Pediatrics.

**Lieutenant Commander Staci (Valenzuela) Kelley, MC, USN**, is currently serving as the Head of the Inpatient Mental Health Division of the Naval Hospital located at Great Lakes, Illinois.

**Lieutenant Commander John Kennedy, MC, USN**, a member of the Navy Special Psychiatric Rapid Intervention (SPRINT) Team, assisted at the Pentagon and the Navy Annex following the terrorist attacks on September 11, 2001; the team provided supportive services to 2,000 active duty and civilian employees on the Navy staff.

**Lieutenant Commander Susan Lippold, M.D., USPHS**, is assigned with the Health Resources and Services Administration in Chicago, Illinois. On September 21, 2001, Lieutenant Commander Lippold was deployed to New York City for two weeks to serve as the Medical Officer in the Field - the supervising physician at what was being termed "ground zero." By the time Lippold arrived, five clinics had been established and four PHS Disaster Medical Assistance Team (DMAT) teams were rotating through the area. The mission was to provide medical care for the rescue and recovery workers on scene. During her second week at the site, the number of patient visits peaked at around 500 per day. The physical stresses were many and constant: sleep deprivation; cold and wet weather; sore blistering feet; walking around the site, often in the dark, through or near foul smelling plumes of smoke (utilizing hard hats and respirators); and, not knowing the extent of the environmental hazards. Lieutenant Lippold reported it as an honor to assist so many during such a difficult time.

**Major Mike Wynn, MC, USA**, completed a company command position with A Company, 168th Medical Support Battalion, Camp Red Cloud, Republic of Korea during 2001. The unit is the most forward deployed medical support company in South Korea. He is currently working in the Family Practice Teaching Program at Fort Belvoir, Virginia.

### **Class of 1995.**

**Lieutenant Commander Christine Casey, M.D., USPHS**, was on duty at her new assignment at the Centers for Disease Control and Prevention in Atlanta, Georgia, when news of the terrorist attacks on the World Trade Center reached her. Lieutenant Commander Casey is the Project Officer for the Clinical Immunization Safety Assessment Network. She is also a member of a Public Health Service Disaster Medical Assistance Team (DMAT), trained to provide emergency medical care during a disaster or other catastrophic events. Deployed to New York City for twelve days, she found that the learning curve was not as steep as it would have been without the USU curriculum and specifically the USU training in identifying chemical agents. Her assignment was to care for the rescue workers; patients included law enforcement officials, firefighters, sanitation workers, telephone repair crews, Red Cross workers and anyone else working at the scene. The medical team treated eye injuries, reactive airway diseases caused by the dust, viral infections, foot injuries (including blisters caused by molten steel burning through work boots), chemical burns, chest pains, and hypertension. Psychiatric debriefings were done while checking feet or suturing cuts to save time.

### **Class of 1996.**

**Captain Daniel Irizarry, MC, USA**, is the Regimental Surgeon for the 325th Airborne Infantry Regiment, 82nd Airborne Division, at Fort Bragg, North Carolina. He graduated in June of 2000 from the Womack Army Medical Center Family Practice Program at Fort Bragg.

**Major Russ Kotwal, MC, USA**, was the Army recipient of the 2000 Chairman of the Joint Chiefs of Staff Award for Excellence in Military Medicine. The selection, which recognizes a medical department officer in any branch of service in grades O-3 through O-5, is based upon achievements in military medicine which promise contributions to the health and well-being of service members and their families. Among his many accomplishments, Major Kotwal developed a Combat Trauma Simulation Center, maintains an Army Ranger Battalion of more than 80 Nationally Registered EMT-Bs (a minimum of one in every Ranger squad), and ensures Ranger medics have state-of-the-art equipment available to treat casualties.

**Lieutenant Commander John M. McCurley, MC, USN**, an internist, is serving as a staff physician in the Office of the Attending Physician on Capital Hill.

**Lieutenant Commander John Mohs, M.D., USPHS**, is assigned to the Northern Navajo Medical Center in Shiprock, New Mexico; he is the Vice Chief of Family Medicine and the Director of the Family Medicine Health Clinic. As such, he is responsible for scheduling, developing and maintaining practice guidelines, and for conducting performance improvement studies; there are 13 physicians and 10 nurses assigned to the clinic.

**Lieutenant Commander Kimberly Mohs, M.D., USPHS**, is assigned to the Northern Navajo Medical Center in Shiprock, New Mexico; she is the Chief of Internal Medicine. As such, she oversees a department of six internists who provide primary care as well as cardiology and pulmonary related procedures and endoscopy. Her department also holds a number of specialty clinics, including hypertension, tuberculosis, renal disease,

gastroenterology, and a uranium miners clinic which she also runs. The Four Corners area has been a primary site for uranium mining over the years, and the clinic mainly treats patients with lung disease or other health problems resulting from exposure to uranium.

**Lieutenant Colonel Peter Weina, MC, USA**, was completing a fellowship in infectious disease at the Walter Reed Army Medical Center in August of 2001, when he rescued a hiker who had slipped on wet rocks and fell into the Potomac River. Lieutenant Colonel Weina was kayaking upstream when the victim was swept downstream in white-water rapids. Hearing calls for help, Weina turned around and went after the victim. An experienced kayaker, he quickly reached the man and pulled him to shore, where he gave him a quick physical examination. After persuading the man to get back into the river because the shore they had landed on offered no route to safety, Lieutenant Colonel Weina lashed the man to the side of his kayak and guided it downriver through the rapids. About 300 yards downriver, they reached rescue boats, one of which took the victim on board. In addition to the Walter Reed fellowship, Lieutenant Colonel Weina is the Acting Chief of Pharmacology in the Division of Experimental Therapeutics at the Walter Reed Army Institute of Research, where he is working on developing drugs for new antimalarials.

#### **Class of 1998.**

**Captain Christopher Lettieri, MC, USA**, received two Resident Teacher of the Year Awards at the Tripler Army Medical Center in Hawaii, from both the Department of Medicine and the entire hospital. He will be the Chief Resident in the Department of Medicine for the 2001-2002 Academic Year.

#### **Class of 1999.**

**Captain Theresa (McFall) Goodman, USAF, MC**, is the first recipient of the Sherry Henderson Award for Excellence in Clinical Communication. The USU SOM Department of Family Medicine, in cooperation with the Uniformed Service Academy of Family Physicians, established the award to recognize a resident who has demonstrated excellence in communication skills. Captain Goodman is a Family Practice Resident at Andrews Air Force Base in Maryland. The award is named for Sherry Henderson, M.D., a former member of the USU SOM Department of Family Medicine.

**Captain Mary McNerney Klote, MC, USA**, was selected as one of 50 outstanding young medical professionals to receive the American Medical Association (AMA) Foundation Leadership Award. The award is annually given to 25 medical students and 25 resident and fellow physicians for their exceptional leadership among their peers and achievements in non-clinical community activities. Captain Klote served as President of the Military Medical Student Association, a national service organization, through which she helped students from the Health Professions Scholarship Program (HPSP) gain access to uniformed program directors from across the country. She also served as Editor-in-Chief of the Journal of the Military Medical Student Association. Captain Klote is an internal medicine resident at the Walter Reed Army Medical Center. The AMA Foundation Leadership Award covers the winner's expenses related to attending the AMA's National Leadership Conference and provides additional opportunities to participate in a series of training sessions specially designed to address the students' needs as future leaders.

**Captain Bob Mabry, MC, USA**, had his research paper, “United States Army Rangers in Somalia: An analysis of combat casualties on an urban battlefield,” published in the September 2000 issue of The Journal of Trauma. Captain Mabry also spoke on Somalia at the Annual Conference of the Association of Military Surgeons of the United States in Las Vegas, at a trauma meeting in San Antonio, and at a military medicine conference in Australia. Captain Mabry, who received the Major John H. Gillespie Award as the Outstanding Transitional Intern of the Year at the Brooke Army Medical Center in San Antonio, was also awarded the Army Commendation Medal for his Somalia research.

**Captain Jeff Mikita, MC, USA**, was named the Intern of the Year for the Department of Medicine at the Tripler Army Medical Center in Hawaii.

**Class of 2000.**

**Captain Matt Bonzani, USAF, MC**, helped to save the life of a 3-day-old baby who suddenly stopped breathing while her parents had dinner at a San Antonio restaurant. Captain Bonzani, an anesthesiology transitional intern at the Wilford Hall USAF Medical Center, and two nurses ensured that the baby had a clear airway and administered CPR. When an ambulance arrived shortly after, the baby had regained a pulse and regular pupil response; she was taken to a local hospital for further treatment.

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## **Selected Profiles of USU School of Medicine Graduates.**

### **Army.**

**Brigadier General William Fox, Jr., MC, USA, USU SOM Class of 1981.** USU's second flag officer, Brigadier General Charles "Bill" Fox, is now triple-hatted as the Corps Surgeon for the XVII Airborne Corps, Commander of the 44th Medical Command, and Director of Health Services at Fort Bragg, North Carolina.

Brigadier General Fox is a board-certified Urologic Surgeon and has served in a variety of Army command, staff and surgical positions including: 5th Special Forces Group Surgeon, Fort Bragg; Company Commander, Company F. (Airborne), Fort Sam Houston, Texas; Commander, 1st Forward Surgical Team (Airborne), Fort Bragg; Chief of Urology at Womack Army Medical Center, Fort Bragg; Commander, 212th Mobile Army Surgical Hospital, Wiesbaden, Germany; Army Special Operations Command Surgeon, Fort Bragg; Commander, U.S. Army Hospital and Joint Readiness Training Center Surgeon, Fort Polk; and, Commander of the 30th Medical Brigade, headquartered in Heidelberg, Germany. During this period, the 30th Medical Brigade, under the leadership of Fox, sustained medical care to NATO forces in Kosovo and Macedonia as part of Operation Joint Guardian. The Brigade also deployed task forces to the Ukraine, Poland, the Republic of Georgia, Mauritania, and Nigeria; and, it supported all V Corps and United States Army Europe exercises and major training events.

Brigadier General Fox, a native of California, attended the second SOM class at the USU SOM in 1977, where he received his Doctorate of Medicine and Alpha Omega Alpha selection in 1981. He is a veteran of the Gulf War where he served as the executive officer of a medical task force in support of the 1/24th Infantry Division in Desert Storm. He was recognized as the Army LTC Physician of the Year for 1994 and received the Chairman of the Joint Chiefs of Staff Distinguished Essay Award for Senior Service Colleges in 1997. He is a graduate of the Command and General Staff College and the U.S. Army War College. Brigadier General Fox is the first USU SOM graduate to achieve the rank of general officer in the Army since the inception of the University.

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**Lieutenant Colonel Paul Mongan, MC, USA, USU SOM Class of 1987,** was selected to serve as the new Chair of the University's Department of Anesthesiology during 2001. He was appointed to his position following a nation-wide search process.

Lieutenant Colonel Mongan is the USU SOM first graduate to become the Chair of a USU SOM Clinical Department. He is the co-author of nearly 30 publications and more than 30 abstracts. Lieutenant Colonel Mongan also helped to write three chapters for a new book, [A Handbook of Cardiovascular Anesthesia](#). He was elected to the Alpha Omega Medical Honor Society while a student at USU. Lieutenant Colonel Mongan is a member of the Association of University Anesthesiologists, the American Society of Anesthesiologists, and the International Society of Anesthesiologists. He received his Bachelor of Science Degree in 1983 and was named to the Phi Kappa Phi Honor Society. Lieutenant Colonel Mongan succeeded Sheila Muldoon, M.D., who will remain in the Department as a Professor of Anesthesiology.

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## Navy.

**Lieutenant Stewart Kerr, MC, USN, USU SOM Class of 1998**, participated in an Arctic, 19-day, biomedical research expedition with four other individuals who completed, what is now referred to as, the “One Million Steps Expedition of 2001.” The One Million Steps Expedition, endorsed by the Royal Canadian Geographical Society, was planned to test the effects of exercise in extreme weather; Lieutenant Kerr was chosen to serve as the physician on the expedition. His selection was due to the fact that he is exceptionally physically fit, trained in cold weather survival, and is serving as a diving medical officer with the Naval Special Warfare Center, where he oversees the medical care of trainees participating in the Navy’s physically and mentally demanding Basic Underwater Demolition/SEAL, or BUDS, Training Course. With the approval of his command, Lieutenant Kerr spent nearly three weeks trekking across Lake Winnipeg in Southern Manitoba, Canada; the five-member team completed the final portion of their journey near Matlock, Canada. Their expedition was designed to test the effects of exercise in extreme weather in an arctic-type terrain and to study the human response to heavy work under extreme conditions. Lieutenant Kerr explained that in preparation for the trip, he planned to combine his knowledge of science and operational medicine to effectively maintain the health of the members of the expedition and to improve the understanding of cold-related stress during military deployments. Lieutenant Kerr and the other team members spent the first days pulling 200 pound sleds and walking an average of eight hours per day, from 14 to 19 miles. Among his equipment, Lieutenant Kerr hauled research gear, an extensive medical support bag, antibiotics, commonly used medicines, and treatments for burns and musculoskeletal problems. The temperatures averaged between 20 to 45 degrees below zero, without factoring in the wind chill. The team members underwent testing on the thirteenth and fourteenth days of their trip when a group of researchers from the University of Manitoba met them and collected breath and blood samples, measuring their metabolism throughout the day. In addition to PBS radio broadcasts, the public was kept informed of their progress through a web site set up via the University of Manitoba. The team also had a satellite phone for emergency evacuation. It is hoped that the “lessons learned” from this expedition will be delivered back to military planners for clothing, equipment, dietary, acclimatization, navigational and logistical modifications, to ultimately improve battlefield performance in austere environments. Lieutenant Kerr was grateful to the Navy and to the Naval Special Warfare Center for allowing him to participate in the expedition; he will remain with the special warfare community through most of 2002. To learn more about Lieutenant Kerr’s experiences and to follow future outings via the Internet, visit <http://www.umanitoba.ca/outreach/lakewinnipeg/>.

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## Air Force.

**Major Lisa Desvigne, USAF, MC, USU SOM Class of 1989**, is a plastic surgery fellow at the Wilford Hall USAF Medical Center at Lackland Air Force Base, Texas. During 2001, Major Desvigne was part of a nine-member plastic surgery team which performed life-changing surgeries for indigent Honduran families at the Santa Teresa Public Health Hospital in Comayagua. The team stayed in rooms at nearby Soto Cano Air Base and was supported by the U.S. Southern Command element at the base. Southern Command directed the mission after receiving a request for aid from the U.S. Embassy in Honduras. Assistance included translators and physicians from the base who had advertised that the team was coming and screened for potential patients. Only those deemed indigent were seen by the highly specialized medical team. Major Desvigne and the other physicians had to improvise and deal with harsh conditions, including the tropical heat, unexpected power outages, bottled water and unsanitary conditions. Although six of the nine medical staff had never deployed on a humanitarian mission, they all quickly took on the challenge of setting up efficient operating and recovery rooms under the austere conditions at the hospital, which was not air-conditioned. The surgeons and anesthesiologists screened more than 80 patients and selected 30 for surgery. They also treated severe burn injuries and congenital deformities. Unlike many charitable medical teams, Army and Air Force teams have been providing such services for 17 years, to include maintaining records on their patients and performing follow-up surgeries as appropriate. After her first day of surgery, Major Desvigne reported that she felt good about what she had done because her patients would never have received the surgeries that they needed so badly. In addition to Wilford Hall, other doctors on the team came from the Brooke Army Medical Center in San Antonio, Texas, and the hospital at Sheppard Air Force Base, Texas. A half-ton of medial supplies were provided by Wilford Hall.

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**Colonel Bryon Hepburn, USAF, MC, USU SOM Class of 1987**, was directly involved with the medical evacuation and treatment of the wounded sailors following the attack on the USS Cole. During the Winter of 2001, Colonel Hepburn, the Senior Flight Surgeon for the evacuation mission, joined in a subsequent review of that response for possible improvements. The retrospective analysis was to include reviews of actions at the local, operational, and strategic levels. Colonel Hepburn visited USU on October 26, 2001, to brief the USU SOM students on the medivac operations. Two C-9 Nightingales from the 75th Airlift Squadron at Ramstein Air Base in Germany carried medical teams from Ramstein's 86th Aeromedical Evacuation Squadron and two Critical Care Air Transport Teams from Landstuhl Regional Medical Center to Yemen and Djibouti. The teams provided the resources and medical care required for the evacuation of patients to Landstuhl. The French doctors in Djibouti were appropriately concerned about letting their critically injured patients make the trip to Germany for care. However, Colonel Hepburn, one of two physicians who could speak fluent French, assured his French colleagues that the wounded would be safe in the hands of the Air Force medical teams.

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**United States Public Health Service.**

**Captain Scott R. Lillibridge, M.D., USPHS, USU Class of 1981**, was chosen to lead the Department of Health and Human Services (HHS) Coordinated Bioterrorism Initiative. Before he was named to the HHS post in July of 2001, Captain Lillibridge coordinated the Centers for Disease Control (CDC) and Prevention efforts for bioterrorism response. He had been with the Centers since 1990 and had led the Bioterrorism Preparedness and Response Program since 1998. In 1995, he led the U.S. Medical Delegation to Japan after the saran gas attack that killed ten people in the Tokyo subway. He also participated, as the lead physician for the U.S. Public Health Service, in the federal public health assessment following the Oklahoma City bombing in 1995. During the 1996 Olympics, he served as the PHS Science Advisor to the multi-agency task force assembled to protect the public against biological and chemical terrorism. He has worked in 14 nations on epidemiology and other public health issues. He has three books in press and has authored or co-authored 25 publications on bioterrorism and various other public health issues. Prior to joining the CDC, he served in the Indian Health Service in Oklahoma and Arizona.

Secretary Tommy G. Thompson, HHS, upon the appointment of Captain Lillibridge stated the following: "I can think of no one better qualified for this critical responsibility than Doctor Lillibridge. He will provide leadership to ensure we can respond swiftly and decisively should some vicious act of bioterrorism be inflicted upon the American People." As the Special Assistant for Bioterrorism, Captain Lillibridge will coordinate anti-terrorism efforts across the Department and will report directly to Secretary Thompson. A vital component of the federal government's response to a bioterrorism event, HHS has responsibilities which include detecting the biological agent, investigating the outbreak, and providing stockpiled drugs and supplies. He will also support the Surgeon General of the United States in his efforts to revitalize the corps and its readiness force.

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## **FACULTY OF THE SCHOOL OF MEDICINE.**

**Composition.** The School of Medicine has 304 full time assigned faculty members: 195 civilians; and, 109 uniformed officers. There are approximately 3,702 non-billeted/off-campus faculty who assist in the USU programs of which 1,096 are civilians and 2,606 are uniformed officers.

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**SOM Clinical and Consultative Services Generate an Estimated \$9.1 Million in Cost Avoidance for DoD in Fiscal Year 2001.** The affiliated Medical Treatment Facilities (MTFs) in the National Capital Region (the National Naval Medical Center (NNMC), the Walter Reed Army Medical Center (WRAMC), and the Malcolm Grow Air Force Medical Center (MGMC) use the services of the USU faculty for the provision of health care.

The USU SOM civilian and military clinical faculty members, as a part of maintaining their credentials and level of proficiency, provide medical services and consultation to the hospital patients and staff and teach and supervise residents. In order to meet national accreditation standards, all teaching hospitals must provide both patient care and teaching/supervision of medical students, interns, and resident physicians. Cost avoidance in the Department of Defense (DoD) is generated by the hours of clinical service and medical expertise provided by the USU civilian and military faculty. Thirteen USU SOM academic departments (Anesthesiology, Dermatology, Family Medicine, Department of Medicine, Military and Emergency Medicine, Neurology, Obstetrics and Gynecology, Pathology, Pediatrics, Preventive Medicine and Biometrics, Psychiatry, Radiology and Nuclear Medicine, and Surgery) provided clinical and consultative support to DoD that totalled some 131,327 hours in 2001, with an estimated cost avoidance of \$9.1 million.

Without the patient care and special services provided by the USU SOM faculty throughout the DoD medical facilities, the military hospitals, clinics, and other facilities would find it necessary to augment their medical staffs by 131,327 work hours in order to maintain the level of patient care within the direct care system.

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**USU SOM Faculty Achieve National and International Recognition.** The SOM faculty members are regularly selected to serve on various study sections for the National Institutes of Health and for other research-granting agencies. Many faculty members, due to their national/international reputations are: 1) selected for editorial boards; 2) designated to serve as consultants or advisors to the White House, the Office of the Secretary of Defense, international schools of medicine (e.g., China, France, Japan, Mexico, Poland, Russia, Thailand, etc.), and numerous Federal Agencies; 3) requested to give invited lectures; and to serve on Federal, national, and international committees; and, 4) recognized as senior officers in a wide variety of professional organizations. A number of basic science and clinical faculty hold senior and deputy editor positions on journals representing their disciplines and specialties. Overall, the SOM faculty has clearly achieved recognition with its peers across disciplines and specialties. USU SOM faculty are routinely chosen to serve on university, military, and Federal and professional organization committees in a variety of leadership and service capacities. Due to the unique

nature of the USUHS SOM mission and certain of its departments, faculty in the Departments of Military and Emergency Medicine, Preventive Medicine and Biometrics, Psychiatry, and Medical History have achieved national and international recognition (Appendix C Provides Examples of Individual Achievements and Recognition).

The majority of SOM clinical faculty are located at the teaching hospitals. The large number of enthusiastic, well-trained primary care and specialist clinicians, based at the hospitals throughout the Military Health System, is an invaluable resource for teaching medical students. Under the oversight and guidance of clinical clerkship directors, this large faculty does an excellent job of medical student clinical training, based on surveys of both students and department chairs. A number of the hospital-based faculty are also involved in clinical research programs through the active clinical investigation programs based at the teaching hospitals. To further enhance communication and cooperation between the USU SOM and its affiliated teaching facilities, the Office of the Associate Dean for Clinical Affairs has completed an updated series of memoranda of understanding between the University and its affiliated teaching and research institutions which clearly defines areas of responsibility and accountability. Outcome data such as student-reported satisfaction, student performance on National Board examinations, hospital commanders' overall satisfaction with the performance of USU graduates, and the large percentage of operational and leadership positions held by USU graduates throughout the Military Health System, indicate that the SOM faculty is performing a stable and highly satisfactory job of educating medical students for the Uniformed Services.

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### **Collaborative Efforts.**

Teaching. Cooperation in teaching has been systematically developed within the departments, between departments, and within subspecialties, to improve the educational experience of both medical and graduate students (the SOM faculty also provides the instructional base for the Graduate Education Programs at the University). The composite curriculum in behavioral sciences, drawing on Neurology, Psychiatry, and Medical Psychology, is a significant example of interdepartmental cooperation in undergraduate medical education.

The graduate programs in Neuroscience, Molecular and Cell Biology, and the newly established Interdisciplinary Graduate Program in Emerging Infectious Diseases illustrate a sound cooperative relationship in research and graduate education. The Tumor Biology Program, an interdepartmental effort between the Departments of Pathology and Surgery, serves as a bridge between basic science and clinical practice in Medical Oncology. The special interest groups in curriculum studies have resulted in basic science input into the hospitals, with collaboration in research, and more importantly, with collaboration in teaching, as the basic scientists provide science instruction to the medical house officers and junior faculty within certain subspecialties of mutual interest. (Information was drawn from the SOM 1999 Self-Study, Section VI, pages 7, 9, 14, and 16.)

New Department of Anatomy, Physiology and Genetics. A significant change took place over the past two years in the academic structure of the USU SOM. The Department of Anatomy and Cell Biology and the Department of Physiology were formally merged to create the Department of Anatomy, Physiology and Genetics (APG). The philosophy of the newly formed department conforms with the mission and goals of the USU Strategic Plan. The philosophy is based upon a commitment to the highest level of excellence in teaching,

research, and administration. The departmental merger has consolidated the teaching, research, and administrative functions of a substantial component of the University within a single faculty group under the leadership of a single Department Chair. One result of this action is that one half of the first year medical curriculum is now offered by the Department of Anatomy, Physiology and Genetics. Integration of the formerly separate anatomy and physiology curricula is resulting in a single, cohesive and dynamic course which spans the entire first year of medical education. At the same time, the Department Chair and APG Faculty have recommitted to serving the Graduate School of Nursing (GSN) and will continue to provide didactic training for the GSN students in the areas of physiology and neuroscience. As expected, the departmental merger is yielding benefits beyond the immediate outcomes of curriculum integration. The joining of a diversified faculty is empowering the Department of APG in its on-going efforts to recreate its program in graduate education and has provided the environment for the formation of new and productive research collaborations. One outcome of this process is the evolution of an educational track in "Human Biology and Genetics." The goal of this Ph.D. track is to provide students with a state-of-the-art understanding of technologies in genetics, genomics, proteomics and bioinformatics, and molecular and cell biology, assembled around a fundamental understanding of human anatomy and physiology in both normal and disease states. Another outcome is the creation of a research team and program project grant to support disease-based multidisciplinary research. Further, the efficiency gained in departmental administration is enabling the Department Chair and APG faculty to play leadership roles in the evolution of vital interdepartmental programs including those in Medical Genetics and Applied Human Biology. Both of these nascent programs have been recognized for their intrinsic academic value and for their direct relevance to the needs of the Uniformed Services. While additional time is required to fully realize the total benefits of the departmental merger, it is clear that increased efficiency, functional integration, and enhanced collegiality will continue to be constant hallmarks of the outcomes.

Interdisciplinary Research Programs. The research and development goals of the USU strategic plan are to build, sustain, and publicize interdisciplinary research programs relevant to the needs of the Uniformed Services. Currently, there are three interdisciplinary research programs: 1) **Emerging Infectious Diseases.** Initially, a special interest group from the USU SOM Departments of Microbiology and Immunology and Preventive Medicine and Biometrics, to include faculty from other departments who are interested in infectious diseases, began meeting and successfully submitted a proposal for an NIH training grant in this area. This effort led to the establishment of the Emerging Infectious Diseases (EID) Graduate Program. The EID Program has three academic tracks within the field of emerging infectious diseases: microbiology and immunology; pathology; and, preventive medicine/parasitology, with primary interest in the pathogenesis, host response, pathology, and epidemiology of infectious diseases. The research training emphasizes modern methods in molecular biology, cell biology and interdisciplinary approaches. The inaugural graduate student class of 10 matriculated in the Fall of 2000; the second class of 12 students entered in the Fall of 2001; two full-time uniformed service applicants have also been accepted for the Fall of 2002; 2) **Molecular and Cell Biology.** A second Interdisciplinary Program, in Molecular and Cell Biology (including Genetics), has been developed to contribute to cross-disciplinary interactions and to develop critical skills needed for data presentation and analysis; the program also includes a seminar series and a journal club, all of which support the Ph.D. program. This interdisciplinary Ph.D. program offers training to address many of the fundamental questions of modern biology ranging from protein-nucleic acid interactions to cytokines, growth factors, and developmental biology. Research areas include molecular biology of lymphocyte interactions; host-pathogen interactions; cell surface, cytoplasmic and nuclear receptor signaling pathways, exocrine

secretory processes, and gene targeting in mice to include a transgenic mouse facility for targeted gene disruption using homologous recombination. Two students entered the program in the Fall of 2001; and, 3) **Neuroscience**. The Interdisciplinary Program in Neuroscience and its Ph.D. graduate program are supported by faculty members whose primary appointments are established throughout the SOM departments. It provides a seminar series, and flexible program of courses and research areas for graduate students and postdoctoral fellows. Research areas strongly represented by faculty include: development, regeneration, and plasticity in the nervous system; molecular neurobiology; and, adaptive responses of the nervous system to stress, injury, and a changing environment. Integrated interdisciplinary instruction in the development, structure, function, and pathology of the nervous system and its interaction with the environment is also included. Seven students entered the program in the Fall of 2001.

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## **Selected Profiles of USU School of Medicine Faculty.**

**USU SOM Dean Announces Retirement.** During 2001, **Val G. Hemming, M.D., Dean, USU SOM,** announced his retirement date of May 19, 2002. Dean Hemming has served as the Dean of the School of Medicine since May of 1996; he had previously held the position of Chair, Department of Pediatrics, since his retirement from the Air Force in October of 1990 through May of 1996. Dean Hemming was first assigned to the Department of Pediatrics in 1980; while on active duty, he was appointed as Chair of Pediatrics in 1987. From 1983 through 1990, he also served as the Specialty Consultant in Pediatrics to the Air Force Surgeon General; and, from 1987 through 1990, he served as the Consultant in Pediatrics to the Assistant Secretary of Defense for Health Affairs. His academic and research interests have included the pathogenesis of Lancefield group B streptococcal infections in the neonate, pathogenesis of lower respiratory tract bacterial, viral infections in infants and young children, and pediatric education for undergraduate medical students. Most significant has been his research in Respiratory Syncytial Virus (RSV) Infection; this research resulted in a biological product for the prevention of RSV infection for children which was approved by the Food and Drug Administration in January of 1996. Dean Hemming was awarded the Doctor of Military Medicine, Honoris Causa, at the USU Commencement on May 19, 2001. The citation for the honorary degree recognized Dean Hemming as a physician, teacher, scientist, military officer, humanitarian, husband, father, and grandfather. Also, the University award recognized Dean Hemming's "lifetime of pursuing multiple goals... always guided by a core principle of service... to family, church, and country..." Dean Hemming changed the SOM curriculum through a caring and thoughtful style of management and by doing so, ensured the full accreditation of the SOM by its accrediting organizations. The University's gratitude toward Dean Hemming for his accomplishments and contributions to the SOM and to the entire University are reflected in the standing ovation paid to him as he accepted the Honorary Degree of Doctor of Military Medicine. Following Dean Hemming's announcement of his retirement plans, a nation-wide search for his replacement was initiated. Captain Larry W. Laughlin, MC, USN, was chosen to be the fourth Dean of the SOM; Dr. Laughlin joined the University in 1991 and has served as the Chair of the SOM Department of Preventive Medicine and Biometrics since 1998. Captain Laughlin currently holds the Sanford Chair in Tropical Medicine, named in honor of the first Dean of the SOM, Jay P. Sanford, M.D.; he will retire from active duty in the Navy and assume responsibilities as Dean of the SOM in May of 2002.

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**USU President Selected by U.S. Medicine as the 2001 Recipient of the Frank Brown Berry Prize in Federal Healthcare.** **James A. Zimble, M.D., President, USU,** was selected as the 2001 Recipient of the Frank Brown Berry Prize in Federal Healthcare. The annual award, named after the first Assistant Secretary of Defense for Health Affairs, honors individuals who are part of that segment of medical professionals who labor hard but reap little personal financial gain from their accomplishments. U.S. Medicine cited that Dr. Zimble "led USU to significant growth, academic excellence and increased recognition from the civilian academic medical community. He led the transformation of the University from a medical school to an academic health center for the MHS. His leadership helped to tailor the curriculum at all levels to meet the unique demands of military medicine." Dr. Zimble has donated the \$10,000 prize which accompanies the award to create a new endowment with the Henry M. Jackson Foundation for the Advancement of Military Medicine. The Foundation subsequently established

the Endowment for Military Operational Medicine. The endowment will provide a fund to support efforts within the MHS for research, teaching, and other activities specifically related to military operational medicine.

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**USU Faculty Develop New Humanitarian Assistance Courses.** Humanitarian missions have been occurring at an accelerating pace over the past decade, and fall largely outside of the realm of traditional medical education. A definite requirement exists for training to prepare non-USU graduates for deployment. The development of the Humanitarian Assistance Courses at USU is supported by a congressional grant through the USU SOM Department of Military and Emergency Medicine.

Department of Pediatrics. The Dean of the School of Medicine and the Department of Pediatrics took the lead in developing and providing interactive training to better prepare military health care providers to care for victims of humanitarian emergencies. The Pediatrics-generated Military Medical Humanitarian Assistance Course is an intensive two-day course. It involves refocusing the health care approach to a population emphasis, specifically concentrating on those populations living in austere environments following natural or man-made disasters. In addition to didactic sessions, instruction is carried out by utilizing case scenarios and simulated case management exercises based on real world experiences previously encountered by military providers. The course climaxes in hands-on skills stations where attendees learn and demonstrate their newly acquired knowledge and skills in dehydration/diarrhea, malnutrition, and infectious diseases. This unique, one of a kind, interactive course sponsored by the Education Section of the Department of Pediatrics, under the direction of **Lieutenant Colonel Jeffrey L. Longacre, MC, USA, Assistant Professor of Pediatrics**, has now graduated over 400 health care providers who are better prepared to care for victims of humanitarian emergencies should the need arise. On average, the course is given monthly throughout the United States; it is sponsored by the USU Office of Continuing Education for Health Professionals.

Department of Medicine. **Lieutenant Colonel Michael J. Roy, MPH, MC, USA, Associate Professor, Department of Medicine**, is the USU SOM Department of Medicine Course Coordinator and Director of the Division of Military Internal Medicine. Major Roy's three-day course prepares medical residents and junior staff for deployment on humanitarian assistance missions. Some of the lectures included in the course are already available in PowerPoint slides on the department's web site at <<http://www.usuhs.mil/med/milmedlect.htm>>. Major Roy has coordinated the Department of Medicine's efforts to focus on military relevance through research, faculty development, and curricular reform. The course has two major elements: 1) to prepare participants for working in an environment that may differ greatly from what they are accustomed to - limited medications and capabilities, different diseases and considerations, and colleagues from many nations and non-governmental organizations; and, 2) to refresh internists on the basics of medicine outside of their usual practice (adult primary care), and teach the essentials of field pediatrics, obstetrics and gynecology, orthopedics and dermatology. Twelve participants took the course on March 26-28, 2001. The attendees earned continuing medical education (CME) and were particularly impressed with the coverage of pre- and post-deployment issues, the care of amputees, and the overall depth and diversity of the material presented.

Department of Military and Emergency Medicine. **Lieutenant Colonel John M. Wightman, USAF, MC, FS, Associate Professor, Department of Military and Emergency Medicine**, recently completed a three-day pilot curriculum to prepare military emergency medicine residents for humanitarian missions. Lieutenant Colonel Wightman and his colleagues will evaluate and complete the curriculum for nationwide dissemination during 2002.

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**Past University Faculty Member Named Navy Surgeon General.** Vice Admiral Michael Cowan, who served as Vice Chair of the Department of Military and Emergency Medicine and Chief of Operational and Emergency Medicine at USU from 1982 through 1985, became the Navy's 34th Surgeon General on August 10, 2002. Previously, the Chief of Staff for the Assistant Secretary of Defense for Health Affairs, he succeeded retiring Vice Admiral Richard Nelson. As Surgeon General, Admiral Cowan will continue his close ties with the University as an ex-officio member of the Board of Regents and as a member of the USU Executive Committee. Admiral Cowan also received the University Medal and presented the Commencement Address during the USU Graduation on May 19, 2001.

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**SOM Off-Campus Faculty Member, Department of Surgery, Becomes the Nation's 40th Army Surgeon General.** **Lieutenant General James B. Peake, MC, USA**, was sworn in as the Army's 40th Surgeon General on September 22, 2001; he was also named as the Commander of the U.S. Army Medical Command, Fort Sam Houston, Texas. (In both positions, he replaces **Lieutenant General Ronald Blanck**, who retired from active duty after 32 years of service and nearly four years as the Surgeon General of the Army.) Following service in Vietnam where he was awarded the Silver Star, a Bronze Star with "V" device and the Purple Heart with oak leaf cluster, General Peake entered medical school at Cornell University in New York and received his medical doctorate in 1972. He is a board-certified thoracic surgeon and a Fellow of the American College of Surgeons, a Fellow of the Society of Thoracic Surgeons, and a Fellow of the American College of Cardiology. He is also a 1988 graduate of the Army War College. As the Surgeon General of the Army, General Peake serves on the USU Board of Regents as an ex-officio member; and, he also serves as a member of the USU Executive Committee.

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**Department Chair of Family Medicine Retires and new Chair is Selected.** **Colonel Jeannette South-Paul, MC, USA, Chair, Department of Family Medicine**, retired on July 9, 2001, after more than 15 years with the University. Among her many accomplishments as the Department Chair, Colonel South-Paul successfully provided oversight for the initial establishment and implementation of the University's faculty development program; a program that her Department continues to sponsor in coordination with the Associate Dean for Faculty Affairs; during 2001, courses and seminars were provided for 250 USU attendees who earned over 300 hours of continuing education credit. Additionally, in 1991, Colonel South-Paul became the first USU Vice President for Minority Affairs. Under her leadership recruitment strategies, support programs, and diversity activities were established and implemented. Upon her retirement, Colonel South-Paul has been selected for the position of Chair, Department of Family Medicine, at her alma mater, the University of Pittsburgh. Following an

extensive search, **Lieutenant Colonel Brian Reamy, USAF, MC**, was selected to serve as the new Chair of the Department of Family Medicine and began his assignment on September 4, 2001. Lieutenant Colonel Reamy received his Bachelor's Degree from Georgetown University; he completed his residency in Family Medicine at the David Grant Medical Center, Travis Air Force Base, California; and, he has completed a fellowship in faculty development and academic medicine at the University of California, San Francisco. He is also a recent graduate of the Air Force Air War College.

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**Department Chair of Military and Emergency Medicine Moves to New Position.** On September 24, 2001, **Craig Llewellyn, M.D., Professor and Chair, Department of Military and Emergency Medicine (MEM)**, stepped down after serving as the Chair of the Department for 14 years (1987 through 2001). Dr. Llewellyn will remain at the University as a tenured professor and also as the **Director of the Center for Disaster and Humanitarian Assistance Medicine (CDHAM)**, within the Department of Military and Emergency Medicine. Dr. Llewellyn first joined the University in 1982, when he was selected to serve as the Commandant of Students from 1982 through 1987. He also holds appointments as Professor of Surgery and Professor of Preventive Medicine and Biometrics. At his retirement ceremony, it was noted that "Dr. Llewellyn's patience and willingness to share his expertise over the past eleven critical years have played a significant role in the development of the intellectual content that was successfully used to justify both the continuation of the University and the Joint Meritorious Unit Award presented to USU by the Secretary of Defense on December 11, 2000. Dr Llewellyn has served as a foundation for the University in its continuous efforts to effectively respond to the special needs of military medicine." Dr. Llewellyn was also honored at the 107th Annual Meeting of the Association of Military Surgeons of the United States when he received the Richard A. Kern Lecture Award for his lecture, "Military Medicine in the New Millennium: Will it be Relevant?" **Colonel Clifford Cloonan, MC, USA, SOM Class of 1983**, is serving as the Interim Chair for the Department of Military and Emergency Medicine. Colonel Cloonan previously served as the Dean of the Joint Special Operations Medical Training Center at Fort Bragg, North Carolina, for three and one half years; and, he continues to serve as the current Emergency Medicine Specialty Consultant to the Army Surgeon General.

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**USU SOM Department Chair Plays a Significant Role Following September 11, 2001.** **Robert Ursano, M.D., Professor and Chair, USU SOM Department of Psychiatry, Director of the USU Center for the Study of Traumatic Stress, and Recipient of the Lifetime Achievement Award from the International Society of Traumatic Stress**, was widely sought and quoted in the media following the terrorist attacks of September 11th; Newsweek, The New York Times, The Washington Post, and The Wall Street Journal sought Dr. Ursano's views in his capacity as an international expert in traumatic stress. In addition, Dr. Ursano's Editorial on Post-Traumatic Stress Disorder was also published in the January 2002 issue of the New England Journal of Medicine. Dr. Ursano appeared on ABC News, NBC News, and the National Public Radio to discuss the psychological and behavioral effects of the September 11th terrorist attacks on the Nation. In addition, he was an invited participant on the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) panel on planning for bioterrorism, and the World Psychiatric Association Symposium on Disaster and Terrorism. Dr. Ursano also serves on a 12-member task force, RED-NUFF, for the Secretary of Defense. Within hours of the terrorist attacks in New York and at the Pentagon, Dr. Ursano and his Center for the Study of Traumatic Stress

provided: 1) immediate, on-going consultation to the hospitals, medical care planners, and elected leaders of New York City, the State of New York's Response Management Team, the Pentagon's Response Planning Team, and the Arlington Hospital (42 casualties were received from the Pentagon) on staff stress/interventions; 2) continuous manning for the Stress Support Office at the White House/Executive Office Building; 3) on-going provision of resources and information packets for the USNS COMFORT deployment teams for stress related to body handling, concern over families, and terrorist activities; and, 4) a Disaster Care Resources site on the USU Trauma Center Web Page.

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**Outstanding Biomedical Graduate Educator Award Presented to the USU SOM Associate Dean for Graduate Education. Michael N. Sheridan, Ph.D., Associate Dean for Graduate Education and Professor, Department of Anatomy,** was selected to receive the Outstanding Biomedical Graduate Educator Award during May of 2001. This award recognizes the outstanding contributions of a member of the biomedical graduate faculty in the USU SOM. The recipient must have demonstrated commitment to graduate education through his/her extensive and outstanding contributions to the education of students in the doctoral training programs. The award also recognizes excellence in teaching, mentoring of graduate students, administering of graduate programs, and promoting the interests of graduate education. Dr. Sheridan served as a Professor in the USU SOM Department of Anatomy from 1980 through December of 2001 when he retired from the University.

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**SOM Department Chair Selected for Mastership in the American College of Physicians - American Society of Internal Medicine. Robert E. Goldstein, M.D., Professor and Chair, USU SOM Department of Medicine,** was selected for Mastership in the American College of Physicians - American Society of Internal Medicine. Induction was announced for April of 2002. Dr. Goldstein also served as a Visiting Professor at the Tripler Army Medical Center in Honolulu, Hawaii, where he made a presentation on rheumatic heart disease, participated in a teleconference with the Royal Thai Military Hospital on the subject of dengue fever, and gave a cardiology conference for the housestaff. Dr. Goldstein continues to review frequently for the Annals of Internal Medicine, JAMA, and multiple cardiology journals.

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**SOM Department Chair Receives the Distinguished Service Medal of the Commissioned Corps of the United States Public Health Service. Captain William H.J. Haffner, M.D., USPHS, Professor and Chair, USU SOM Department of Obstetrics and Gynecology,** retired from the Commissioned Corps of the United States Public Health Service (USPHS) on August 1, 2001; his retirement recognized a completion of a 30 year career which included major duties and responsibilities with the Indian Health Service, the National Naval Medical Center, and USU. Upon his retirement, The USU Distinguished Service Medal was presented to him by the USU Board of Regents. Dr. Haffner had earlier been presented with the Distinguished Service Medal of the Commissioned Corps of the USPHS. In March of 2002, he became the Secretary-Treasurer of the Association of Professors of Gynecology and Obstetrics and in April of 2002, he was awarded the Distinguished Service Medal

of the American College of Obstetricians and Gynecologists. Dr. Haffner competed again for his position as Chair, Department of Obstetrics and Gynecology, and following a national search, he was reappointed as Chair of the SOM Department on August 6, 2001.

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**A Patient Care Research Program Is Established by SOM Department Chair. Colonel Bahman Jabbari, MC, USA, Professor and Chair, USU SOM Department of Neurology,** established a patient care research program at USU which focuses on reducing the damage to the spinal cord/spinal column after initial injury and investigates strategies to alleviate the resulting symptoms. The research program is a combined Army/Navy venture; the clinical arm of the program is being conducted in close collaboration with the program managers at the affiliated hospitals: **Lieutenant Colonel Jim Eckland, Chief, Neurosurgery Service, and Lieutenant Colonel Robert Labutta, Chief, Neurology Department, at the Walter Reed Army Medical Center; Captain Bertrand DuVal-Arnould, MC, USN, and Commander Frederick W. Foote, MC, USN, Neurology, at the National Naval Medical Center; and, Lieutenant Colonel Geoffrey Ling, Vice Chair, Department of Neurology, at USU. Dr. Cinda Helke, USU SOM Associate Dean for Graduate Education,** provided leadership during the implementation of the basic science arm of this program. Colonel Jabbari was also the guest speaker at the University of Bologna, Italy, in August of 2001. He presented the “Results of the Epilepsy Surgery for Refractory Epilepsy from DoD’s comprehensive Epilepsy Program.” Colonel Jabbari was also the invited speaker at the 38th Interagency Botulism Research Conference hosted by USAMRMC which was held on October 17-19, 2001, in Easton, Maryland. Colonel Jabbari served on the National Institutes of Health Fellowship Education Award Committee and on the Technology Committee of the American Epilepsy Society. His research introducing “A New Modality of Treatment for Low Back Pain,” was published in Neurology in May of 2001; and, it received extensive media coverage on CNN News, the Canadian Television Network, and Time Magazine.

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**Proposal by USU SOM Department Chair Is One of 14 Finalists.** The proposal, “Mental Stress as a Trigger of Cardiac Electrical Instability in Altered Autonomic Responses in Health Failure,” written by **David S. Krantz, Ph.D., Professor and Chair, USU SOM Department of Medical and Clinical Psychology,** has been selected by The Charles A. Dana Foundation as one of 14 finalists for development of a full proposal. The Charles A. Dana Foundation is a private philanthropic foundation with principal interests in health and education. The founder’s abiding beliefs were in the capacity and responsibility of individuals to shape and advance their lives and in the singular role of philanthropy to help them to do so.

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**President of the Faculty Senate Honored by the USU Board of Regents and Selected to Receive the 2000 AAMC Humanism Award. Merrily Poth, M.D., Professor, USU SOM Departments of Pediatrics and Neuroscience,** was recognized during 2001 when she was presented the USU Distinguished Service Medal for her service as President of the Faculty Senate from July of 1999 through June of 2000. Dr. Poth was recognized

for her service to the faculty and USU as an effective spokesperson through her efforts in presenting the views and meeting the requirements of the faculty. She met regularly with senior USU management officials and the Board of Regents to maximize communication across the University. Her coordination resulted in the development of curriculum on computer and Internet technology, the establishment of the Carol Johns Award for Outstanding Faculty Members, and the implementation of the USU Nursing Mother's Program. In addition, Dr. Poth was recognized as one of 47 physicians from across the Nation who were selected by medical students to receive the 2000 Association of American Medical Colleges (AAMC) Humanism Award on October 28, 2001, in Chicago, Illinois. The AAMC and the Pfizer Medical Humanities Initiative sponsor the award and annually honor medical school faculty physicians who embody the qualities of a healer who teaches healing. Honorees are nominated based upon their positive mentoring skills, compassion and sensitivity, collaboration, community service activity, and observance of professional ethics.

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**USU Professor Serves on the DoD Prevention, Safety, and Health Promotion Council.** Neil Grunberg, Ph.D., Professor, USU SOM Department of Medical and Clinical Psychology, has been appointed to a two-year term on the Alcohol Abuse Tobacco Use Reduction Committee. The committee comes under the DoD Prevention, Safety, and Health Promotion Council (PSHPC). Dr. Grunberg is a leading researcher for DoD on tobacco use. He has been a scientific editor on two U.S. Surgeon General Reports on Smoking and a consultant to the Army, Navy and Air Force Surgeon Generals. The PSHPC is an executive-level group of the DoD, service secretariat, service leaders, and the Interagency Military and Veterans Health Coordinating Board; the council supports the goals of the Military Health System Strategic Plan to advance health and safety promotion in peacetime and during contingency operations. In July of 2001, Dr. Grunberg was quoted in a Reader's Digest article, "The Unfiltered Truth." Dr. Grunberg pointed out that because "very few people knew women who died young of smoking-related causes, there has been a tremendous misimpression that women don't suffer heart and respiratory problems from smoking." Dr. Grunberg has been studying gender differences in smoking since the early 1980's.

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**Department of Medicine Selects new Vice Chair for Research Programs.** Colonel George Tsokos, MC, USA, Professor, Department of Medicine, was selected to serve as the Department of Medicine's new Vice Chair for Research Programs during 2001. He is responsible for optimizing the overall research performance of the department, as measured by peer-reviewed publications, funding, and scientific distinctions which support the core missions of USU and the Department of Medicine. Colonel Tsokos continues to serve as the Director of the Department of Medicine's Division of Rheumatology/Immunology and Chief of the Department of Cell Injury at the Walter Reed Army Institute of Research. He will also continue to provide grant writing advice and assistance and to make recommendations on the Department of Medicine's research policies. During 2001, Colonel Tsokos was appointed as Section Editor for the Journal of Immunology. He was also elected to serve as the Councilor of the Clinical Immunology Society; this five-year term leads to the position of president-elect after three years, and then full presidency of the Society after another year. The mission of the Society is to promote the interests of clinical immunologists. Colonel Tsokos has been a Professor of Medicine at the USU SOM since 1991.

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**Department of Energy Grants \$2.4 million to USU Researcher. Michael Daly, Ph.D., Assistant Professor, SOM Department of Pathology**, currently has six active grants totalling over \$3.5 million supporting a research program dedicated to understanding and exploiting DNA repair processes in the extremely radiation resistant bacterium “Deinococcus radiodurans.” Daly’s two most recent grants were awarded by the Department of Energy in September of 2000 (\$1.2 million) and September of 2001 (\$1.2 million). This research is aimed at supporting the development of radiation resistant bacteria for decontamination of radioactive wastes. The bioremediating organisms and techniques already developed by his team were accepted for review by the U.S. Patent Office during 2000, with legal expenses carried by the Henry M. Jackson Foundation. In the last two years, Dr. Daly has published ten papers on a range of topics including genomic informatics, bioremediation, DNA repair and bioterrorism. A review of his progress in the areas of genomic informatics and “Deinococcus” work in the Department of Pathology has received international attention and was published in Microbiology and Molecular Biology Reviews in March of 2001. According to a cover story in U.S. News and World Report during 2000, Daly’s work promises to substantially reduce the estimated \$150 billion cost for cleaning up toxic wastes such as those found at nuclear waste sites. The exposure by the media has placed Dr. Daly in demand as an invited speaker as well as a consultant to scientific bodies; for example, Dr. Daly was appointed a Planetary Task Group Member (National Academy of Sciences) to advise NASA on protecting Jupiter’s moon, Europa, from forward contamination by future exploratory missions, and most recently, protecting Earth from back-contamination following NASA’s planned 2008 Mars Sample Return Mission. Dr. Daly teaches part of the USU Graduate Course, The Emerging Threat of Biological Weapons and Bioterrorism, where he lectures on the emerging impact of genomic informatics on the development of such weaponry.

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**Professor of Family Medicine Recognized by the University of Tennessee. Cindy Cox Wilson, Ph.D., Professor and Director of Faculty Development, SOM Department of Family Medicine**, received the Robert H. Kirk Distinguished Doctoral Alumni Award in Health and Safety; the award was presented on March 30, 2001, at the University of Tennessee Reception and Social during the Annual Convention of the American Alliance for Health, Physical Education, Recreation and Dance. In addition, Dr. Wilson’s enthusiastic leadership and coordinating efforts with the SOM Associate Dean for Faculty Affairs led to the presentation of courses and seminars during 2001 which were attended by 250 USU SOM faculty members who earned a total of 300 continuing medical education credits.

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**Professor Emeritus of Medical History Selected to Receive Award. Robert J. T. Joy, M.D., Professor Emeritus of Medical History**, was informed during 2001 that he had been selected to receive the 2002 Nicholas E. Davies Memorial Scholar Award from the American College of Physicians - American Society of Internal Medicine. The Davies Award is presented to an individual for outstanding contributions to humanism in medicine and recognizes the person’s scholarly activities in history, literature, philosophy, and ethics. Dr. Joy was one of the University’s first faculty members; he served as a Professor and Chair of the SOM Department of Medical History from 1976 until his retirement in 1996. As Professor Emeritus, he continues to lecture medical students on the history of military medicine. Additionally, Dr. Joy was the first USU SOM Commandant from 1976 to 1981; he retired at the rank of Colonel from the Army in 1981. Before coming to USU, he was the Director and Commandant of the Walter Reed Army Institute of Research.

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**USU SOM Uniformed Faculty Member Selected as One of Ten Outstanding Young Americans for 2001. Lieutenant Colonel George E. Peoples, Jr., MC, USA, Assistant Professor, Department of Surgery,** was selected as one of the Ten Outstanding Young Americans for 2001 by the United States Junior Chamber of Commerce. Lieutenant Colonel Peoples was recognized for: his contributions in the field of cancer research and the development of preventative vaccines which prove applicable to lung, colon, breast, prostate, ovarian, and pancreatic cancer. The award exists to honor 10 Americans each year who exemplify the best attributes of the Nation's young people, aged 21 through 39. Winners are selected on their achievements or contributions in categories ranging from scientific and technological advancements to philanthropic contributions or voluntary services. Past honorees include John F. Kennedy, Gerald Ford, John D. Rockefeller, and Bill Clinton. Dr. Peoples began working in the field of cancer vaccinations while at the M.D. Anderson Cancer Center in Houston, Texas.

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**USU SOM Faculty Member Receives the Doris Duke Clinical Scientist Development Award. Thomas Darling, M.D., Assistant Professor, Department of Dermatology,** was the 2001 recipient of the Doris Duke Clinical Scientist Development Award for his research, "Tumorigenesis in Multiple Endocrine Neoplasia Type I." He was one of nine faculty-level awardees to receive research funding for up to five years. The Doris Duke Charitable Foundation seeks to improve the quality of people's lives by nurturing the arts, protecting and restoring the environment, seeking cures for diseases, and helping to protect children from abuse and neglect.

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**USU Professor Leads Team Searching for Clues to the Cause of Bone Loss. USU Department of Medicine Professor, Jay Shapiro, M.D.,** is a team leader for bone studies at the National Space Biomedical Research Institute. He is searching for clues to the cause of bone loss or osteoporosis in astronauts after returning from space travel. Dr. Shapiro says the condition has become so prevalent that NASA considers osteoporosis an inherent risk for those participating in the space program. Dr. Shapiro is studying spinal cord injury patients at the National Rehabilitation Hospital in Washington, D.C. He has pointed out that once an individual loses muscle function, he/she also loses bone. This is true in space for astronauts because their muscles no longer have to function against gravity. He is currently studying zoledronate, a newly approved and powerful bisphosphonate, which slows the rate of bone absorption; he believes zoledronate could help staunch astronauts' bone loss. Dr. Shapiro also heads the Inter-Departmental Center for Space Medicine at USU which promotes education and research in this area.

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Appendix C provides selected examples of billeted and off-campus members of USU Departments and Programs and Department Activities receiving special recognition during 2001.

## **RESEARCH CENTERS AND PROGRAMS.**

**We will optimize our role in military and federal medical education and research.**

**We will effectively communicate the right information to the right people at the right time.**

- Goals 5 and 7 of the USU Strategic Plan.

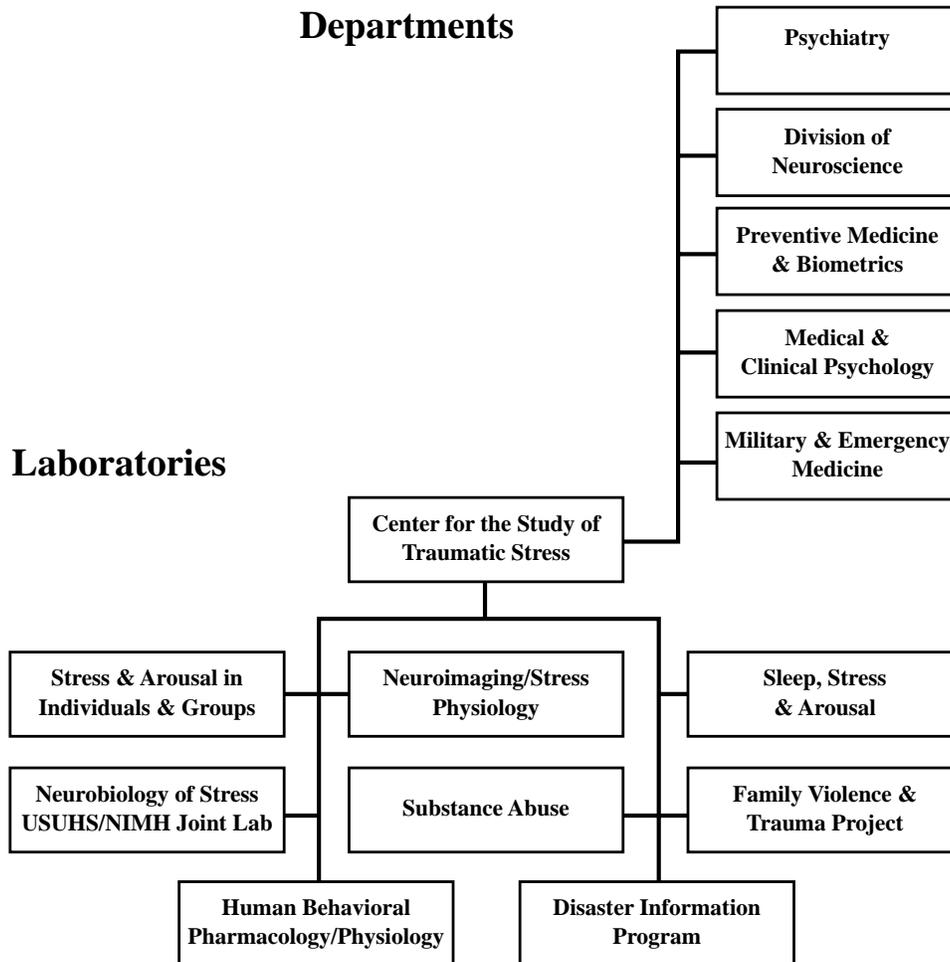
**Research is Directed Toward Military Requirements.** As discussed in the “Strategic Planning and Research Administration” sections of Part I of this report, the majority of the research programs and projects currently taking place at USU are focused on meeting the needs of the Uniformed Services. Research protocols throughout the SOM study diseases of high military relevance for troop deployment and sustainment. In 2001, the USU intramural program consisted of 80 militarily relevant protocols. These research projects support the military mission by advancing the understanding of both the transmission and the internal mechanisms of a spectrum of pernicious and/or common diseases which may be faced by warfighters. For example, technological advances by USU researchers have made it possible to predict mosquito population levels and transmission risks for a range of mosquito-borne diseases such as malaria, even within precise areas and time frames. By using satellite imaging and remote sensing devices, USU researchers assist in predicting high-risk locations for the occurrence of malaria and similar diseases. These predictions focus disease-control operations and conserve scarce finances as well as human resources. Research contributed by SOM faculty relating to combat casualty care continues to provide rapid diagnostic methods and treatments which ensure military readiness. In addition, the research of the SOM faculty is also directed toward military operational medicine. The following SOM Centers, Activities, and individual researchers are provided as selected examples of the research and consultative services taking place throughout the School of Medicine.

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## SELECTED PROFILES OF SOM CENTERS AND PROGRAMS

(See Appendix C for Additional Examples of Individual Achievements and Recognition)

USU School of Medicine Department of Psychiatry and the Center for the Study of Traumatic Stress.



Establishment. The terrorist attacks at the World Trade Center and at the Pentagon on September 11, 2001; hostage events; the poison gas attack on the Tokyo subway; the Oklahoma City, Africa, and USS Cole Bombings; and, disasters such as Japan's Kobe Earthquake which left 6,000 dead, 30,000 injured, and 300,000 homeless; as well as, more common traumatic events such as motor vehicle accidents, hurricanes, tornadoes, and physical assaults are all substantial health risks to both those who serve our Nation in the Uniformed Services and the

general population of the United States. As the Academic Health Sciences Center for the Uniformed Services, USU is both nationally and internationally recognized for its consultative services to government and private organizations in times of disasters and critical incidents. USU is well situated to assist in meeting the needs of the Military Health System and of the Nation in the area of traumatic stress.

The USU Center for the Study of Traumatic Stress was established in 1987 as a center of excellence for responding to DoD's long-term concerns over the substantial health risks resulting from the traumatic impact of: 1) the possibility, or actual use, of weapons of mass destruction (WMD) during combat, acts of terrorism or hostage events; 2) combat, peacemaking, peacekeeping, and operations other than war; 3) natural disasters such as hurricanes, tornadoes, or floods; and, 4) more common stress producing events such as physical assaults and motor vehicle, shipboard, or airplane accidents. At present, investigators from the four USU SOM Departments of Psychiatry, Preventive Medicine and Biometrics, Military and Emergency Medicine, and Medical and Clinical Psychology, and the SOM Division of Neuroscience are collaborating on extensive studies of traumatic stress. The Center's scientists are involved in a wide range of projects including responses to natural, man-made, and environmental disasters; the studies examine community responses to loss of life and property, community displacement, and organizational leadership. In addition, the Center projects involve the examination of the physiologic change after trauma and the neurobiology of stress.

Mission. Today, the Center for the Study of Traumatic Stress, as a cutting-edge scientific endeavor, continues to increase the military's medical knowledge (epidemiology, psychological, biologic, origins, and treatment) of the consequences of bioterrorism, trauma, and disaster and to apply that knowledge in addressing the real world problems and requirements of homeland defense, the response to terrorism and disaster, and humanitarian assistance. **Robert J. Ursano, M.D., Professor and Chair, USU SOM Department of Psychiatry, serves as the Director of the Center.**

Core Military Competency. The location of the Center within the multi-Service environment of USU, with its emphasis on education and development, studies, research, and on-going clinical and operational practice is critical to the development and sustainment of the Center's ability to provide its core competency - **the capability to ensure the continued provision of critically required military-unique, medical expertise and consultative support in response to the impact of traumatic stress during and following activities related to crisis management, disaster response, and homeland defense.** The successful assessment and management of the behavioral, psychological, and social consequences of WMD-related and other national security contingencies is essential to DoD during the organization of effective responses to such events. Failure to attend to the consequences of WMD may lead to panic or demoralization and could undermine the confidence of the Armed Forces and American citizens in their government and its institutions. Only DoD has a self-renewing source of physicians and other medical personnel with interest and experience in these areas. USU, through its students at both the undergraduate and graduate levels, and its career-focused faculty and staff, plays a vital role for the DoD in the renewal process of militarily-focused and experienced health care providers in the study of traumatic stress. The Center's unique military medical capability to assess and manage the traumatic impact of WMD and other disaster-related contingencies provides direct support to Homeland Security and Defense.

Response on September 11, 2001. Within hours of the terrorist attacks in New York and at the Pentagon, the Center provided: 1) immediate, on-going consultation to the hospitals, medical care planners, and elected leaders of New York City, the State of New York's Response Management Team, the Pentagon's Response

Planning Team, and Arlington Hospital (42 casualties were received from the Pentagon) on staff stress/interventions; 2) continuous manning for the Stress Support Office at the White House/Executive Office Building; 3) on-going provision of resources and information packets for the USNS COMFORT deployment teams for stress related to body handling and concerns over families and terrorist activities; 4) a Disaster Care Resources site on the USU Trauma Center Web Page; 5) OSD-coordinated and immediate responses to requests for consultation and expertise from Newsweek, ABC News, The Washington Post, and, The New York Times; 6) information packets to the Body Recovery Teams in both New York and Washington, D.C.; and, 7) membership on the Secretary of Defense's 12 member Task Force, "RED NUFF."

National and International Recognition of the Center's Leadership. **Robert J. Ursano, M.D., Professor and Chair, USU SOM Department of Psychiatry**, is internationally recognized as an expert in traumatic stress. In November of 2000, Dr. Ursano received the Lifetime Achievement Award, the highest award given by the International Society for the Study of Traumatic Stress. This award is given for outstanding and fundamental contributions to the understanding of traumatic stress; the award citation made particular note of Dr. Ursano's national and international contributions. Following September 11th, Dr. Ursano was widely quoted in the media including The New York Times, The Washington Post, and The Wall Street Journal; he also appeared on ABC News, NBC News, and the National Public Radio to discuss the psychological and behavioral effects of the September 11th terrorist attacks on the Nation. In addition, he was an invited participant at the DoD Terrorism Task Force, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) Panel on Planning for Bioterrorism, and the World Psychiatric Association Symposium on Disaster and Terrorism. Dr. Ursano; **Colonel Ann Norwood, MC, USA, USU SOM Class of 1981, Associate Professor and Associate Chair, USU SOM Department of Psychiatry**; **Carol S. Fullerton, Ph.D., Research Associate Professor, USU SOM Department of Psychiatry**; and, **Captain Thomas A. Grieger, MC, USN, USU SOM Class of 1987, Associate Professor, USU SOM Department of Psychiatry**, participated as subject matter experts in an International Consensus Conference on Acute Interventions following Mass Violence and Trauma.

Dr. Ursano and his colleagues in the Center for the Study of Traumatic Stress and the Department of Psychiatry published the following articles during 2001: 1) the "Effects of Exposure to Death in a War Mortuary on Posttraumatic Stress Disorder Symptoms on Intrusion and Avoidance," 2001 issue of The Journal of Nervous and Mental Disease, Volume 189, pages 44-48; 2) "Factors Associated with Depression on a Hospital Ship Deployed during the Persian Gulf War," 2001 issue of Military Medicine, Volume 166, pages 248-252; and, 3) "Gender Differences on Posttraumatic Stress Disorder after Motor Vehicle Accidents," 2001 issue of The American Journal of Psychiatry, Volume 158, pages 1486-1491.

In October of 2001, Dr. Ursano and Colonel Ann Norwood participated in a panel discussion on "The Commitment and Role of Psychiatrists in Disasters - Lessons from the September 11th Disasters," organized by the International Congress of the World Psychiatric Association.

Areas of Study. Twelve major projects are currently funded with over six million dollars from the following sources: the Department of the Army; the National Alliance for Research on Schizophrenia and Depression; the National Alliance for the Mentally Ill Research Institute; the National Institute on Drug Abuse; the Substance Abuse and Mental Health Services Administration of the Department of Health and Human Services; the Stanley Foundation; and, the U.S. Marine Corps. Ongoing studies include the following areas: psychological and behavioral responses to weapons of mass destruction; combat stress; the prevention of stress-related disease;

shipboard fires and emergencies; relocation stress; prisoners of war; leadership of those suffering from grief; medical personnel in disasters; traumatic stress and the immune function; community responses to disaster; identification of high risk populations; chronic stress; medical treatment following trauma; biomedical responses to stress; family violence; and, others.

Recently funded studies include: combat stress in Bosnian-deployed troops; stress among emergency workers after an air disaster; psychological stress in the U.S. military deployed to Desert Storm/Shield; family violence and trauma; stress and women's health; combat, deployment, contingency operations, and trauma; basic neurobiology of genetic and second messenger stress responses; stress and arousal symptoms in individuals and groups using the Persian Gulf War symptoms as a paradigm; disaster psychiatry education; natural disasters and health outcome: adult and adolescent responses to Hurricane Andrew; genetic risk for substance abuse and cognitive processing; and, animal models for the study of the neurobiology of trauma responses and depression.

Focus of the Center's Nine Laboratories. The Center has nine research laboratories which concentrate on the following areas of study: stress and arousal in individuals and groups; neuroimaging/stress physiology; sleep, stress and arousal; social function in high stress environments; neurobiology of stress; family violence and trauma; human behavioral pharmacology/physiology; substance abuse; and, disaster information.

Scope of Research/Consultative Efforts. The Center's staff serve as consultants to a large number of federal and non-federal institutions involved with the understanding of responses to traumatic events and in the development of health policies. The Center's collaborative efforts in education and clinical research respond to the following entities: **Federal Consultations** - the United States Army, Navy, Air Force, and the Marine Corps of the Department of Defense; the Department of Veterans Affairs; the Department of State; the Agency for International Development; the National Aeronautics and Space Administration; the National Institute of Mental Health; the National Transportation Safety Board; and, the Peace Corps; **Private Sector Consultations** - The American Medical Association; the American Psychiatric Association; the American Red Cross; the American Psychological Association; the Montgomery County (Maryland) School Systems and Police Departments; the Maryland Office of Motor Vehicles; the Oklahoma State Department of Health; and, the Los Angeles earthquake areas; **International Consultations** - the World Health Organization (consultation to Yugoslavia); the Armenian Ministry of Health; the Singapore Armed Forces; the Disaster Stress Center of the University of Oslo, Norway; the University of Beirut, Lebanon; and, the Traumatic Stress Center of the Hadassah Medical Center, Jerusalem, Israel. Scientists from the USU Center for the Study of Traumatic Stress and their international collaborators from Norway, Israel, and Russia are performing studies at USU to better understand the individual, community, national, and international responses to traumatic events.

Fellowship Programs. The Center sponsors two trauma and disaster-related fellowship programs: the Visiting Science Fellowship Program and the Military Psychiatry Fellowship Program. Graduates of these programs serve as catalysts to research, educational, and clinical programs throughout the world. During 1998, the Center sponsored a visiting scientist from the Japanese National Defense Medical College. Since October of 1998, the Center has hosted a total of eight scientists from numerous nations, to include Japan, Singapore, Korea, and Germany.

Educational Activities. Another effort of the Center is its sponsorship of trauma and disaster-related programs. During 2001, the Center conducted a conference, **Planning for Biological Events: Responses to Terrorism & Infectious Disease Outbreaks**. The Center for the Study of Traumatic Stress, the USU SOM Department of Psychiatry, and the Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, Department of Health and Human Services, sponsored a three-day conference. Attendees included internationally known scientists, public health and mental health leaders from the state and local levels, and representatives from the state executive branches. The conference was organized to: examine how communities perceive their needs for behavioral and mental health response preparedness in anticipation of bioterrorism and infectious disease outbreaks in the wake of training provided by DoD and the Department of Justice; develop recommendations for behaviorally and psychologically informed interventions to maintain and restore community function; provide recommendations on health communication and risk appraisal to state and local community leaders and others in order to respond more effectively to the mental health consequences of terrorist attacks; and, develop recommendations for education, training, and resource requirements to assist state and local officials to prepare for the mental health aspects of infectious disease outbreaks. The conference included four major presentations: 1) Learning from the Past: The 1918 Influenza Pandemic; 2) Biological Agents of Terror and Community Response; 3) State and Local Response Plans; and, 4) the New York City Experience. The conference extensively discussed how biological agents are the “atomic concern” for the New Millennium. The anthrax attacks demonstrated the ability of agents such as bacteria, viruses, and prions to create substantial disruptions. Future management of bioterrorism requires a multidisciplinary approach to understanding the effects of these agents on nations, communities, families, and individuals.

Preservation of Lessons Learned. The health implications of traumatic stress are a focused interest immediately following each trauma or disaster, but the data tends to be lost from institutional memory because of the lack of an organized center for the maintenance and development of the resulting information. The USU Center for the Study of Traumatic Stress has served the Military Health System by capturing, organizing, and maintaining relevant information following disasters, terrorist events, and wars. Currently, the Center’s basic computer data base (accessible to the Uniformed Services) provides over 15,000 items on traumatic stress.

Accomplishments of the Center’s Family Violence and Trauma Project. The Center’s Family Violence and Trauma Project (FVTP) will enter its seventh year in October of 2002. The Center’s FVTP provides support to command including the Army Community and Family Support Center Headquarters and Staff; the Headquarters, Department of the Army Family Advocacy Committee; the Family Advocacy Research SubCommittee; Family Advocacy Program Managers; Chiefs of Social Work Services; and, Army Social Workers. The FVTP has provided immediate responses, briefings, papers, and staff studies to the Headquarters Department of the Army Family Advocacy Program Managers and the Family Advocacy Research SubCommittee reference issues involving the scientific and medical aspects of child and spouse abuse.

In addition, the FVTP has completed its analysis of two major surveys of active duty soldiers and spouses to investigate the relationship between deployment and spouse abuse. Also, an analysis was initiated on the Army’s Transitional Compensation data base, which lists cases of soldiers who have been discharged from the Army where spouse or child abuse has been a part of the discharge. Joining Forces, a quarterly newsletter of the FVTP, brings important research to the field and enjoys strong popularity within the Army and the DoD. The FVTP has also continued to add to its scientific literature data base of family violence articles. This data base is

used for scientific reference to improve the development of family violence research protocols and to further the research education of Army military and civilian research social workers. Many of these articles have been sent to investigators and program managers in the Army's Family Advocacy Program (FAP) and FAP-related programs such as the military police school for teaching police to respond to incidents of family violence. During 2001, the Project responded to 37 different requests for various studies of FAP populations.

The Center Is Positioned to Respond to Future Requirements of the Military Health System. The USU Center for the Study of Traumatic Stress, with its acknowledged experts and collaborative network of national and international scientists, is positioned to continue in its response to the special needs of the Military Health System and the Nation as requirements are identified in areas such as 1) adaptation, recovery, and resiliency; 2) posttraumatic and terrorism-related psychiatric illness; 3) neurobiology of stress; 4) medical illnesses developing as a consequence of traumatic stress; and, 5) the impact of traumatic stress on the health of individual family members, family units, and organizational and community functioning.

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**The USU School of Medicine Department of Preventive Medicine and Biometrics, Graduate Education in Preventive Medicine and Public Health, and the Centers for Preventive Medicine and Public Health.**

**Graduate Education in Preventive Medicine and Public Health.** The SOM Department of Preventive Medicine and Biometrics (PMB) offers programs of study leading to the graduate degrees of Master of Public Health (MPH), Master of Tropical Medicine and Hygiene (MTM&H), Master of Science in Public Health (MSPH), Doctor of Public Health (DrPH), and Doctor of Philosophy (PhD) in Medical Zoology and Environmental Health Sciences. Between 1983 and April of 2002, PMB has graduated 397 individuals and granted 357 MPH, 2 MSPH, 25 MTM&H, 1 MS, 8 DrPH, and 8 PhD Degrees. During 2001, 29 Preventive Medicine and Biometrics students were awarded advanced degrees: 1 Doctor of Philosophy; 4 Doctors of Public Health; and, 24 Masters of Public Health. The PMB Graduate Programs have undergone considerable growth over the past years and have approximately 41 students in the current class. With its stated mission “to produce knowledgeable and highly skilled public health professionals in support of the health and global mission of the Uniformed Services,” the PMB Department has sought to be responsive to the needs of its customers; and, this is reflected in the types of programs and training offered. During 2001, PMB continued its collaborative educational agreements with the Walter Reed Army Medical Center Preventive Medicine Residency Program and Internal Medicine Fellowship Program, the Army Program for Training in Health Services Administration, the Army/USPHS Laboratory Animal Medicine Program, the Navy Dental Research Institute Program in Dental Public Health, and the Indian Health Service Environmental Health Training Program.

The class composition, as of April 2002, for the Graduate Programs in Public Health consists of 41 Master-level students (MPH, MTM&H, and MSPH). Thirty-eight of these students are in the Uniformed Services and three are civilians. The mix of the 41 health professionals reflects the following: 22 physicians; 6 veterinarians; 3 Army Medical Service Corps (MSC) officers; 3 Air Force Biomedical Science Corps (BSC) officers; 1 Canadian medical officer; and, 6 USPHS officers. First-year residents in General Preventive Medicine/Public Health, Occupational and Environmental Medicine, and Laboratory Animal Medicine take courses and meet all of the requirements for the MPH or MTM&H Degrees as part of their residency training. At the doctoral level, 11 individuals (2 uniformed officers; 9 civilians) are Doctor of Public Health candidates and four individuals (2 uniformed officers; 2 civilians) are Doctor of Philosophy candidates.

The Graduate Education Programs offered by the PMB Department, as an integral part of the SOM and the SOM Office of Graduate Education, are included in the full accreditation granted by the Commission on Higher Education of the Middle States Association of Colleges and Schools to the University. In addition, the PMB graduate programs are nationally accredited by the Council on Education for Public Health (CEPH). Additionally, the PMB Department has the distinction of being one of only seven accredited resources approved for course work in tropical medicine in the United States. The PMB Department is affiliated with the United States Army and Navy Biomedical Research Laboratories located in: Bangkok, Thailand; Rio de Janeiro, Brazil; Nairobi, Kenya; Cairo, Egypt; Jakarta, Indonesia; and, Lima, Peru. The MTM&H Program includes a six-week overseas clinical experience in tropical medicine; the students find excellent opportunities at these overseas laboratories. A research program also exists under an agreement with the Ministry of Health in Belize. Several doctoral students have found considerable opportunities to do research in these various locations.

Following the CEPH accreditation process in 1998, an ad hoc committee was established to articulate the mission, goals, and objectives of the PMB graduate programs. This document has since become part of a dynamic process of program review and evaluation for continuous quality improvement. In addition to curriculum review and evaluation, attention is also being paid to measurable teaching and learning outcomes for the assessment of program effectiveness.

In response to the CEPH requirement for a practicum or field experience as part of the MPH program, a new departmental program office was established to direct graduate student activities related to the practicum experience and the required MPH independent project. For the practicum, students have the opportunity to apply knowledge and skills learned in the classroom within various “real world” settings at public health agencies and other health-related organizations offering practical experiences as a planned, supervised, and evaluated educational activity. Examples of practicum sites include the following: Headquarters, United States Air Force Safety Center; the National Security Administration; the Pentagon, Defense Medical Oversight Committee; the Food and Drug Administration, Center for Veterinary Medicine; the State of Maryland, Department of Health and Mental Hygiene; the United States Consumer Product Safety Commission; the Office of the Assistant Secretary of Defense for Health Affairs, Clinical and Program Policy; and, the White House Commission on Complementary and Alternative Medicine Policy. Additionally, greater emphasis has been placed on the research methodology for MPH independent projects. Each June, the Department sponsors an annual Public Health Colloquium to feature the four or five best independent projects. A growing number of student projects eventually culminate in publications in peer-reviewed journals. **Tomoko (Tonie) I. Hooper, MD, MPH, Assistant Professor, Department of Preventive Medicine and Biometrics**, is the Director of Graduate Research and Practicum Programs; and, she is also the Deputy Director for the Department of PMB’s Graduate Education Programs.

Outstanding Responsiveness to the Continuing Medical Education Requirements of the TriServices. A new PhD Program in **Environmental Health Sciences** was recently established in response to the identified needs of the Uniformed Services and has admitted its first student, an active duty Navy officer. In addition, the MSPH Program graduated its first two degree candidates in 2000, with two other individuals expected to complete the program in June of 2002. The two-year MSPH program is designed for the non-physician practitioner planning a career in one of four specialty areas of public health: *environmental health; industrial hygiene; health physics; or, medical entomology*. Students have the opportunity to design and develop research protocols leading to a Master Thesis. **Following the September 11, 2001, attack on the Pentagon, two MSPH students and one PhD student, as well as the PMB Department staff, assisted the Army and the Environmental Protection Agency (EPA) to set up a command unit for chemical detection.**

Recognizing the importance of occupational musculoskeletal injuries among military personnel and in response to the Army’s request for specialty training in occupational ergonomics within the MPH Program, a new area of concentration was established, **the Occupational Ergonomics Concentration in the Department of Preventive Medicine & Biometrics Master of Public Health Program**; the first student will enter this program in July of 2002. Finally, the Air Force Surgeon General identified a need for *international health specialists* which resulted in an additional new area of concentration within the MPH Program. Four entering students will begin this program during the 2002-2003 Academic Year.

In response to the request of the Military Health System, **the TriService Advanced Military Tropical Medicine Course** was first offered at USU during the Summer of 1996. The course resulted from a consolidation of the Walter Reed Army Institute of Research’s Tropical Medicine Course and the Navy’s Medicine in the

Tropics Course. **Under the auspices of the USUHS-SOM Department of Preventive Medicine and Biometrics, Department of Defense personnel receive education and training in tropical infectious diseases as an integral part of their medical readiness training for foreign military operations.** The four-to-seven week Military Tropical Medicine Course is held annually in July. During 2001, 69 military medical officer students were trained in operational military medicine, consisting of four weeks of lectures and laboratories in the advanced diagnosis and treatment of tropical diseases. Approximately 70 lecturers provided 122.5 hours of didactic instruction. The course included parasitology, bacteriology and virology laboratories; one medical entomology laboratory; and, one outbreak investigation laboratory taught by multiple PhD instructors. Military medical officer students have traveled on numerous field missions to overseas sites with PMB faculty members. They have been able to observe, examine, diagnose and treat patients with tropical diseases in their local settings. To date, approximately 300 students have completed the course.

Additionally, training in **Tropical Medicine and Travelers' Health** is offered as a 12-week course during the Spring Quarter of the MPH program. **It includes a comprehensive lecture, seminar, laboratory and case-based curriculum approved by the American Society of Tropical Medicine and Hygiene and leads to eligibility for the qualifying examination in Tropical Medicine and Travelers' Health.** To date, seven medical officers have completed the course, including six who have subsequently taken and passed the certification examination.

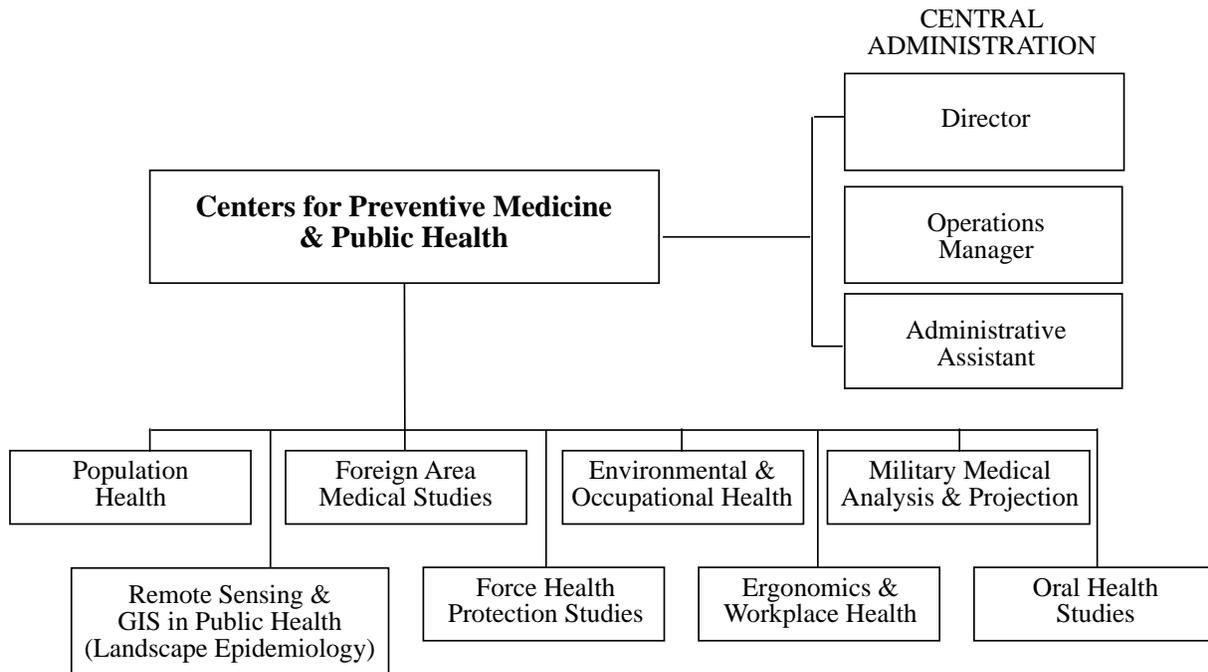
The **Diagnostic Parasitology Course** is offered as **a series of lectures and hands-on laboratory sessions for individuals wishing to study parasitic infections in humans.** Military and civilian medical technologists and physicians from all parts of the world have completed this course. Participants for the course have included: U.S. Embassy personnel from Asian and African countries sent by the U.S. State Department; members of the Peace Corps; a medical doctor from the Japan Ground Self Defense Force; and, civilians from various foreign and domestic health-related organizations. Since 1988, over 222 individuals have taken the course; to include 14 individuals who took the course during 2001.

**Medical Executive Skills Training:** Integrating Clinical Managerial Decisions to Improve Population Health is a five-day training course held four times each year. **It was established in 1995 in response to the Congressional mandate requiring current and prospective DoD health care leaders to receive training in health care management and administration.** The program integrates lectures, hands-on computer laboratory exercises, and web-based distributed learning approaches. Continuing Medical Education credit has been approved by the following: the Accreditation Council for Continuing Education; the American Nurses Credentialing Center's Commission on Accreditation; the American Academy of Family Physicians Commission on Continuing Medical Education; and, the American College of Healthcare Executives. **To date, 24 sessions have been held in the TRICARE regions and approximately 700 senior officers have been trained.**

**PMB Laboratory Animal Medicine Residency Program.** The Department of Defense (DoD) and the United States Public Health Service (USPHS) have identified a critical need for veterinarians trained and board-certified in the field of laboratory animal medicine. The U.S. Army, which is the Executive Agent for Veterinary Services in the DoD, and the USPHS both require a constant influx of well-trained veterinarians to meet their mission requirements. **The USU Laboratory Animal Medicine Residency Program (USULAMRP) is currently the primary mechanism by which the unique training requirements for veterinarians trained in laboratory animal medicine are met.** The USULAMRP is a 24-month program approved by the American College of Laboratory Animal Medicine (ACLAM) Training Program Recognition Committee, which allows graduates of this program to apply for board eligibility under the formal training option. First year residents take courses in the MPH Program, which provides them with the necessary knowledge and skills to effectively manage a wide variety of animal care and use programs. In addition to the academic foundation provided by the MPH core courses, students are required to complete an independent project having public health relevance by the end of their first year. As part of their residency requirements, students additionally complete a preceptorship at a federal biomedical research facility, conducting research resulting in a first-author manuscript in the field of laboratory animal medicine; the manuscript must be accepted for publication in a peer-reviewed scientific journal by the end of the second year. Graduates of this residency program are prepared for a challenging career, which may include practicing laboratory animal medicine, developing and managing animal care and use programs, advising Institutional Officials on compliance issues, and supporting animal-based biomedical research. Since its first class in 1996, the USULAMRP has become one of the premier laboratory animal medicine residency programs in the world and has set the standards for academic and practical excellence. **The pass rate of the USULAMRP graduates on the ACLAM board-certifying examination has consistently been far above the national average.** This program is a vital link in the continued ability of the United States Army and the USPHS to continue to meet legal and regulatory requirements for conducting animal-based research.

**Centers for Preventive Medicine and Public Health.** The Centers for Preventive Medicine and Public Health (CPM/PH) are an entity within the USU SOM Department of Preventive Medicine and Biometrics. The eight Centers operate under terms of a Memorandum of Understanding with the Henry M. Jackson Foundation for the Advancement of Military Medicine. The Centers combine broad expertise in research, consultation, education, training, and clinical preventive medicine and public health; this expertise is used to develop data bases and analytic methodologies, prepare innovative curricula, and evaluate processes and outcomes in clinical practices. The following eight Centers provided consultative, research, and educational services to the TriServices during 2001:

- 1) The Center for Application of Remote Sensing and Geographic Information Systems (GIS) in Public Health (Landscape Epidemiology);
- 2) The Center for Environmental and Occupational Health;
- 3) The Center for Ergonomics and Workplace Health;
- 4) The Center for Force Health Protection Studies;
- 5) The Center for Foreign Area Medical Studies;
- 6) The Center for Population Health;
- 7) The Center for Military Medical Analysis and Projection; and,
- 8) The Center for Oral Health Studies.



The eight PMB Centers serve program managers and policy makers in the Department of Defense, other federal agencies, local governments, and private organizations concerned with health policies and services. The Centers coordinate the resources of multiple separate centers of excellence to ensure that the appropriate collective expertise is applied. The PMB Centers enhance the stability and long-term effectiveness of USU and the Defense Health Program by: attracting, retaining, and providing for the professional growth of outstanding faculty and staff; providing high quality educational experiences for both medical and graduate students; and, promoting excellence in research and clinical preventive medicine and public health. **Kenneth E. Kinnamon, D.V.M., Ph.D., Professor, USU SOM Department of Preventive Medicine and Biometrics, serves as the Director for the eight PMB Centers.**

### **Examples of Research/Consultative Efforts.**

#### **The Center for Application of Remote Sensing and Geographic Information Systems in Public Health (Landscape Epidemiology).**

**Background.** Remote sensing has an increasingly prominent role in the improvement of public health programs; therefore, graduate students in public health are seeking formal training and experience in remote sensing technology. The Center's earlier NASA-supported research equipment, along with additional equipment provided by a recent NASA grant for the purchase of hardware and software, have both been used to establish a Center in which remote sensing technology is applied to emerging and re-emerging infectious diseases and environmental health.

**Mission.** The Center provides faculty expertise and the software and hardware necessary for students and faculty to engage in basic landscape epidemiological research utilizing remote sensing (RS), geographic information systems (GIS), and other technologies to protect the environment and improve public health. The Center compiles satellite and earth-based data to identify relationships between environmental parameters and human health. This information is used to predict the temporal and spatial distribution of diseases, as well as the impact of environmental perturbations on health. **Donald R. Roberts, Ph.D., Professor, USU SOM Department of Preventive Medicine and Biometrics, serves as the Director for the Center, specializing in remote sensing and geographic information systems.**

**Educational Activities.** The Center offers a four-hour credit course entitled, "Remote Sensing and GIS Methods in Public Health," and non-credit training classes in remote sensing and GIS to students and faculty. Both credit and non-credit courses cover the basic elements of remote sensing and geographic information systems (GIS) with emphasis on the areas most relevant to public health (such as classification, raster GIS modeling, and integrating field maps with remotely sensed images). The credit course is offered in the Fall Quarter as part of the MPH curriculum and has been enthusiastically received by the students. It covers remote sensing, image processing, GIS, and spatial analysis methods as applied to the field of public health. The goal of the course is to provide students with a combination of theoretical background, applications in the published literature, and hands-on experience in using hardware and software to apply the techniques discussed in class. The lectures cover types of remote sensing imagery, image processing, photointerpretation of various imagery types, application of remote sensing to public health, the overview and history of GIS, GIS data structures, GIS data entry, geographic analysis, cartographic presentation, and applications of GIS to public health. The laboratory provides students with hands-on experience in the public health uses of image processing and GIS software. The Center computers are being used to support research activities for several projects including malaria research in Belize, Thailand, and Korea,

as well as for a Bartonellosis project in Peru. For example, the computers are utilized to create maps and analyze the spatial data of the project sites; these maps can be printed and used in the field. The next presentation of the course is scheduled for the Fall Quarter of 2002.

**Malaria Prevention in Korea.** A small remote sensing project to study malaria prevention in Korea was completed by a graduate student as part of his doctoral dissertation. The student used medium and high resolution satellite images to map the mosquito larval habitat for two military bases in Korea. Cost estimates for the larviciding of the two Korean bases were determined using the area estimates for the size of the mosquito larval habitats; thus, information resulting from the graduate student's research project was directly used to benefit the two military bases.

**Malaria Research in Belize.** The Center has conducted research on malaria in Belize since 1995 with funding provided by NASA. The Center has recently received funding from the National Institutes of Health (NIH) along with the University of California, Davis, to continue its work in Belize. Research under the new grant is focused on studying human-induced change, such as deforestation along streams and changes in marsh vegetation due to agricultural runoff and the effect these changing environments have on the distribution of malaria in Belize. One DrPH student is currently using the historical malaria data collected during the earlier Belize research in her dissertation project. In addition, a candidate for a PhD in Medical Zoology is contributing to the mapping of deforestation along rivers under the Belize grant and will use this study as part of her dissertation. Thus, graduate research has been supported to study the spatial distribution of Bartonellosis in several local villages in Belize and the environmental variables which effect the distribution of malaria in Belize.

**Bartonellosis Research in Peru.** During 2001, work was continued on applications of remote sensing to study bartonellosis in Peru. Initiated during 1997, the work in Peru is a collaboration among investigators within the Division of Tropical Public Health in the USU SOM and the Navy researchers at the Navy Research Laboratory in Lima, Peru.

During 2000, a three-year grant was received from the National Oceanographic and Atmospheric Administration (NOAA) to study climate variables and the incidence of bartonellosis. This work is currently being conducted with two climatologists at NASA's Goddard Space Flight Center. In addition, another protocol funded by a five-year grant from the NIH, is being conducted to study the effect of human-induced change on the mosquito habitats in Belize. The Center computers are used in support of both research activities.

### **The Center for Environmental and Occupational Health.**

**Mission.** The Center for Environmental and Occupational Health promotes excellence in programs focusing on environmental and occupational health by providing research, consultation, education, and training support to government entities and educational institutions. Areas of interest pertaining to environmental and occupational health include policy, education, and training; health risk and hazard assessment; standards setting; resource management; regulatory compliance; pollution prevention; and, environmental restoration. **David J. Louis, M.D., M.S., Col, USAF, MC, Assistant Professor, USU SOM Department of Preventive Medicine and Biometrics, serves as the Director of this PMB Center.**

**Research Activities.** During 2001, one research focus was on the development and application of new analytical methodologies for field exposure assessment, such as supercritical fluid extraction, solid phase microfiber extraction, and solvating gas chromatography. Research was also conducted on skin and corneal effects of several lasers used in DoD operational systems.

Another example of the Center's activities is the "DoD Environmental Scholarships, Fellowships and Grants Program," which was initiated during 1994. Approximately two thirds of the appropriation was to be used for the development and implementation of environmental training. This training was to be conducted through a 16 geographically representative university-based consortia. A Report to Congress summarizing the accomplishments of the program from 1994 through 1997 was delivered to the Office of the Deputy Under Secretary of Defense for Environmental Security in January of 1998. The program has continued with its mandate through 1999, with full close-out responsibilities in November of 2001. To date, over 40,000 instructor hours of training have been delivered to more than 3,200 trainees by the various grantee institutions. The program provided a total of more than 447,000 trainee classroom hours, reflecting the duration of the course in weeks, the number of classes, the number of hours per class, and the number of participants in each class. A number of the grantee institutions have incorporated the training programs into their curriculum. The training delivered through this program continues to be quite diverse and includes one-day short courses, month-long certification programs, and full-year and degree completion programs. Most of these programs involve hands-on, work-based site learning, and frequently use military installations for field work or full training.

The remaining funds under the training grant were to be used to offer degree completion undergraduate scholarships or graduate fellowships, through the same consortia of 16. Awards to students were offered starting at the beginning of the 1995-96 Academic Year. All schools have now completed the grants with full funding distributed and all closeout reports have been filed. The first recipients to graduate from the Scholarships and Fellowships Program completed their degree programs in 1996 and others followed through 2001. There were 350 fully funded scholarship and fellowship awards made by participating institutions in environmental fields, and these awards covered from one to four years and represented wide geographic areas. Of these, 173 were undergraduate scholarships (45 at the associate level; 128 for a Baccalaureate Degree) and 156 were graduate fellowships (125 for Masters Degrees and 21 for Doctoral Degrees). To date, 329 students have completed degrees with assistance from this program; there are 15 students who remain in the program's education/employment "pipeline." While the number of awards granted is precise, the number of completed programs is more fluid. Many students do not complete degrees as predicted. At least half of these students are graduate students who are frequently engaged in research. As is often the case, the completion of research milestones does not necessarily follow a desired timetable. Students under the Scholarships, Fellowships and Grants Program have a "pay back" obligation to DoD through employment upon the completion of their degrees. A continuing effort has been made to develop a coordinated placement program within DoD for these individuals. Under the terms of the program, each student must sign an agreement to accept an offer of DoD employment upon graduation from the program, with the stipulation that such offers must be received within 90 days of their graduation. While many of these graduates eventually accepted positions in the private sector, one could well infer that graduates of this program, while not able to find a position with the DoD, are nonetheless, working at addressing the Nation's serious environmental issues as a result of the education provided through the program.

The other research activities carried out by the Center include the following: 1) the Indian Health Service Environmental Assessment Support Grant; 2) the Center for Health Promotion and Preventive Medicine (CHPPM) Risk, Hazard, and Information Management Grant; 3) the Development of Environmental Organic

Contaminant Sampling and Analysis Methods Grant (USUHS funded); and, 4) the Risk Assessment of the “Eye Safe Laser” Wavelength for Cornea and Skin Grant.

### **The Center for Ergonomics and Workplace Health.**

**Mission.** The Center for Ergonomics and Workplace Health focuses on an integrated approach to ergonomics and occupational health, targeting both the civilian and military workplace. Research in the Center is directed at understanding the interactive roles of medical, biomechanical, organizational, workplace and individual psychosocial factors in the etiology, prevention, and management of prevalent occupational health problems. In addition to research activities, the Center is also involved in education, public policy, and consultation. The Center is a joint effort between the USU SOM Departments of Preventive Medicine and Biometrics, and Medical and Clinical Psychology. **Michael Feuerstein, Ph.D., Professor, USU SOM Department of Medical and Clinical Psychology, serves as the Director of the Center.**

**Predictors of Health Care and Limited Duty in U.S. Army Soldiers.** Currently, the Center conducts research on the mechanisms and the management of workplace musculoskeletal disorders. For example, a study of the Predictors of Health Care and Limited Duty in United States Army Soldiers was conducted to identify the differential contribution of a diverse set of risk factors for lost time in duty status among Army soldiers due to low back pain. A prospective study was conducted on the role of ergonomic and psychosocial stressors on physical exertion, back symptoms, health care utilization, and lost work time/limited duty status in active duty personnel working in jobs associated with increased disability for back-related issues. Results can subsequently lead to the development of empirically based interventions which directly address identified relationships and to the refinement of existing secondary prevention efforts for reducing the impact of low back pain on soldier readiness. The findings support the importance of early evaluation of ergonomic, workplace, and individual psychosocial variables which can affect the recovery process. The findings also suggest that effective interventions should be directed at reducing or eliminating ergonomic stressors, improving the work climate through supervisor training, as well as training directed toward employees to reduce or eliminate the sources of both job and life stressors. Such an approach should positively impact a range of outcome measures and reduce the burden of low back pain on both the worker and the employer. Two manuscripts were generated from this research; the first paper was based on the cross-sectional analyses and identified risk factors for individuals who had low back pain but were still working. The second paper examined the association between problem solving orientation and physical and mental health outcomes in soldiers reporting a history of low back pain in the past year. This project was supported by funds from the United States Army Center for Health Promotion and Preventive Medicine (CHPPM).

**Self-Report Index for Upper Extremity-Related Ergonomic Exposure.** This Ergonomics Demonstration Project seeks to evaluate the effectiveness of an ergonomic intervention for high risk and non-high risk active-duty soldiers in reducing the occurrence and severity of self-reported musculoskeletal symptoms, perceived level of physical exertion, clinic utilization, lost work time, limited duty status, and self-reported exposure to ergonomic stressors. Ninety-two symptomatic office workers completed a web-based questionnaire measuring demographic variables, ergonomic exposures, pain, job stress, and functional limitations. Comparisons of internal consistency, construct validity, and discriminative and predictive abilities were made between the self-report index and an observational exposure assessment checklist. Results indicated that the self-report index had acceptable

measurement properties. Furthermore, higher levels of self-reported ergonomic exposures were associated with upper extremity pain, symptom severity, and functional limitations. In contrast, higher levels of observed exposure were only related to lower levels of general physical function. The self-report measure has potential for use in occupational health surveillance programs for office work environments and as an outcome measure of ergonomic exposure in intervention trials. These results also suggest the need for utilizing multiple methods when assessing ergonomic exposures. This project was funded by a grant from the Occupational Ergonomics Research Committee. A paper was submitted and is currently under review. Additionally, an abstract was submitted to the annual Applied Ergonomics Conference and is also under review.

**Predictors of Recovery in Occupational Low Back Pain in Primary Care.** The Predictors of Recovery in Occupational Low Back Pain in Primary Care is an on-going investigation designed to develop a screening tool for predicting functional and health outcomes in a military primary care setting. Military personnel and civilians between the ages of 18 and 55 who present with a new onset of back pain (no back pain over the past year) and seeking medical care at the military primary care clinics at Fort Hood and Fort Bliss were invited to participate in the study. Study participants were given a baseline survey which assessed ergonomic exposure, function, general physical health, and general mental health in addition to demographic, individual psychosocial, job stress, work organization, and medical history information. Follow-up data regarding the presence of health care visits for low back pain and limited duty status will be collected for three months following the initial clinic visit using the Ambulatory Data System database. A 12-month follow-up may also be obtained. The study will also develop a screening tool to identify those individuals who may be at an increased risk for delayed recovery. This tool should assist primary care practitioners to identify problem areas which are likely to impact recovery from low back pain and institute appropriate triage procedures and early intervention. This, in turn, may result in improved functional status and reduce the impact of low back pain on military readiness. 450 patients enrolled to participate in the study. Using the Ambulatory Data System (ADS) administrative database, 368 cases did not have a prior medical visit according to the ADS administrative database. According to self-report and confirmation by the ADS database, 304 cases did not have a previous low back pain-related medical visit. Using path analysis of data three-months post baseline survey, job stress factors including innovation, involvement, and supervisor support at work, mental health, previous visits, and ergonomic exposure were components of a model which significantly predicted the occurrence of a clinic visit for low back pain. A 12-month follow-up is planned. This investigation is supported by funds from the U.S Army Center for Health Promotion and Preventive Medicine.

### **The Center for Force Health Protection Studies.**

**Mission.** The Center for Force Health Protection Studies promotes the use of a systematic process to prospectively evaluate disease and non-battle injuries in military and veteran populations for guiding health policy development. The Center's goal is to enhance the scientific knowledge base for military deployment health and to develop recommendations for preventive health interventions. The Center develops databases, analytic methodologies, and models for predicting health outcomes, as well as for identifying and evaluating or designing specific interventions for preventing injury and illness. The Center disseminates information to promote force health protection and participates in interagency research and development programs. It also provides consultation to program managers and executives in the health-related components of the DoD, the Department of Veterans' Affairs, other Federal agencies, local governments, and private organizations. **Tomoko I. Hooper, M.D., MPH, Assistant Professor, USU SOM Department of Preventive Medicine and Biometrics, serves as the Director of the Center.**

**Research Activities.** The focus of the Center's research is on studies which collect, manage, and integrate health-related data for purposes of risk assessment and risk communication to protect individuals who serve our Nation during peacetime and during war. The Center conducts a comprehensive research program on the short-term and long-term health outcomes and experiences associated with training, deployment, combat, and humanitarian/disaster relief operations. For example, current efforts are underway to distill the findings of research across disciplines on the health outcomes associated with service in the Gulf War.

**Medical Events During Periods of Isolation: The U.S. Navy Submarine Force Experience.** A NASA-funded study, "Medical Events During Periods of Isolation: The U.S. Navy Submarine Force Experience," characterized medical conditions occurring among enlisted personnel and officers assigned to United States Navy submarines between January 1, 1997 and September 30, 2000. Medical encounter data from the Navy's Shipboard Non-Tactical ADP Program Automated Medical System (SAMS) was downloaded onto floppy disk by submarine Independent Duty Corpsmen (IDCs) following each underway period of ten days or greater. Medical and demographic data was extracted from SAMS using a download process designed for health studies. These data along with an official Sailing List were sent to study investigators for processing and analyses. SAMS data collection continued through September of 2000; data was received from a total of 249 submarine patrols. Four were excluded from analyses because patrol dates were outside of the study period and nineteen because of insufficient data. Data from the remaining 226 patrols were processed and included in the master database. Incidence density rates were calculated for specific medical conditions occurring during underway periods. The total number of person-days underway was used as the denominator for these rates. Results from the overall study were presented at the USU Research Day; two papers have been published and three others have been submitted for publication. In addition, two graduate students (one Occupational and Environmental Medicine resident and one General Preventive Medicine resident) used data from this study for their MPH projects; and, one project resulted in the submission of a manuscript for publication.

**Epidemiologic Support of Health-Related Research Pertaining to Military, Veteran, and Dependent Populations.** Collaborative research and consultative activities also continue under a working agreement with the Naval Health Research Center (NHRC) in San Diego, California. The program, Epidemiologic Support of Health-Related Research Pertaining to Military, Veteran, and Dependent Populations, is in its sixth year. USU faculty provide administrative and consultative support to the NHRC research program. The original protocol was amended in August of 2000, to reflect the evolution in the scope of the research program from the initial seven epidemiologic studies of Gulf War veterans to a more broad-based, public health-related research program involving active duty military and veteran populations. New research protocols have been developed in the following areas: 1) emerging illness research; 2) deployment health research; and, 3) other research involving military personnel, such as studies of anthrax and pneumococcal vaccines, complementary and alternative therapies, and pregnancy outcomes. Currently, 31 studies are in various stages of completion. These studies will add to the scientific knowledge base on a wide range of public health-related topics, including epidemiologic methodology for population-based studies, reproductive outcomes, vaccination policy, predictors of social and family dysfunction, and tobacco cessation programs.

## **The Center for Foreign Area Medical Studies.**

**Mission.** The Center for Foreign Area Medical Studies advances the tenets of preventive medicine and public health in the tropics and in developing regions, with specific reference to health-related operations and interests of the DoD, other Federal agencies, local governments, and private organizations. The Center promotes, facilitates, and implements programs of research, consultation, education, and training in the related disciplines of tropical public health, tropical medicine, and environmental health in the developing world. **Larry W. Laughlin, M.D., Ph.D., CAPT, MC, USN (Ret.), Professor and Former Chair, USU SOM Department of Preventive Medicine and Biometrics, served as the Director of this Center during 2001.**

**Education and Training.** The “International Research and Training in Emerging Diseases” grant was awarded \$959,000 over six years. Also, the sixth presentation of the Tropical Medicine and Traveler’s Health Course was a resounding success; the course is accredited by the American Society of Tropical Medicine and Hygiene (ASTM&H). All members of the class plan to sit for the ASTM&H Certificate of Knowledge Examination. Although there is a great deal of interest in next year’s course, the greatest impediment to larger classes is the amount of time required to complete the course (12 weeks). The required density of the curriculum precludes any significant reduction in time. The PMB Director of Tropical Public Health is currently reviewing the curriculum of the 12-week course with a view toward combing for efficiency while maintaining standards for accreditation.

The Interservice Training Review Organization (ITRO) consolidation of the Army and Navy Tropical Medicine Training Programs is complete; and, the fifth iteration has been completed at USU with great success. The course will continue to be housed and sponsored by USU; but, it remains an official function of the TriService system, with the Navy as the lead agent.

A major effort has been initiated to transition the tropical medicine courses into a distance learning format; a grant submission is pending to fund this effort.

**Malaria Research.** The major thrust of this program has turned toward DNA vaccine development, in conjunction with major new fundings from the Office of Naval Research. A new five-year grant has been implemented to meet this change in focus. A significant genomics effort has been expanded under recent leadership.

**Bartonellosis Research.** A major new expansion effort has been initiated in the “Epidemiology of Bartonellosis,” including a consortium of USU grant submissions to study human, animal and vector population of areas endemic for Bartonellosis in Peru. A new area of study (epidemic site - Cusco, Peru) has been added in association with an epidemic documented in late 1998. Preliminary data was presented at a meeting on Bartonellosis in Montana during August of 2001.

**Climate and Health.** The relationship of climate and vector-borne infectious diseases has been suggested, but little supporting data is available. As climatic activity can be predicted by remotely sensed satellite images, the Center hypothesizes that predictive climatology can lead to the optimum use of insecticides in vector-borne disease control programs. Funding from a new grant will allow the association of current clinical disease activity with predictable climate changes.

**Filariasis Chemotherapy.** The development of an effective non-toxic drug for the chemotherapy of several tropical diseases is a major objective of the DoD and the World Health Organization (WHO). Based upon biological results obtained with experimental compounds evaluated in human and animal systems, data are examined in light of existing knowledge to further select and refine chemical structures which are progressively more effective against a given disease organism. An inventory of over 250,000 compounds held by the Walter Reed Army Institute of Research (WRAIR) is a major source of new experimental agents. Compounds for evaluation are selected and sent to be tested by WHO at the University of Georgia. Approximately 400 compounds have been evaluated during this reporting period.

**Chagas' Disease Chemotherapy.** If military forces are required to operate in areas which are endemic for Chagas' Disease, the occupation should be of critical concern. These areas, located in Central and South America, are many. The matter is of particular importance because no suitable drug exists to treat individuals who contract the disease. In a manner similar to that described above for filariasis, compounds have been selected from the WRAIR inventory and sent to a test system operated by the WHO at the University of Georgia. Compounds, which have been evaluated, have resulted in four scientific publications by the Center during the past year.

**Leishmaniasis Diagnosis and Treatment.** The DoD is tasked with the diagnosis and clinical management of military personnel having exposure to tropical diseases to include Leishmaniasis. The Walter Reed Army Medical Center (WRAMC) is designated as the diagnostic and treatment center for Leishmania Disease DoD-wide. WRAMC personnel are assisted by the personnel at the WRAIR in this endeavor. Pentostam, a pentavalent antimonial, is the only drug available to DoD for the treatment of Leishmaniasis patients; the resistance to this treatment has been well documented. Thus, the development of alternative therapy is a DoD priority. The collaboration of USU, WRAMC, and WRAIR in facilitating new approaches to the diagnosis and treatment of the disease are significant. During the past year, an improved antibody for the detection of specific IgM and IgG antibodies in patient sera samples of Leishmaniasis (human visceral, human cutaneous, and canine) was developed.

### **The Center for Population Health.**

**Mission.** The Center for Population Health (formerly the Center for Health Care Quality Assessment) is an integral part of the research, service, and educational activities of the PMB Division of Health Services Administration. The Center provides expertise and experience in assessing the quality of health care for populations, analyzing large databases to determine trends in population health and the efficiency and effectiveness of care delivery, and the relationship of practice patterns to outcomes. The Center also develops innovative educational curricula and provides training to Federal health care executives and managers to create, manage, and improve high quality health systems. Through the skills and expertise of its personnel, the Center provides consultation and assistance in health care quality assessment, performance improvement, and policy analysis. These functions are carried out through the two major Centers within the Center for Population Health: the Center for Performance Analysis and the Center for Patient Safety. **Galen Barbour, M.D., FACP, FACHE, Professor, USU SOM Department of Preventive Medicine and Biometrics, serves as the Director for the Center.**

**Center Activities.** The Center is specifically **designed to enable Federal health care providers and administrators to access comprehensive, integrated, population-based performance information to facilitate quality improvement and cost reduction and demonstrate the value and power of the combined Federal health care systems to the American public.** The following was included in the Center's summary report for 2001:

**Obstetrician and Gynecologists Workforce Model.** An analysis of obstetrics and gynecology workforce resources, conducted with the support of the American College of Obstetrics and Gynecology, looked at obstetric and gynecological practice profiles and projected workforce composition and distribution. This study led to the development of an Obstetrician and Gynecologists Workforce Model.

**The Otolaryngologist Workforce Study.** The Otolaryngologist Workforce Study examined workforce trends and provided supply projections through the year 2050. Upon the completion of the study, an article was submitted and accepted for publication.

**The Medical Executive Skills Distance Learning Program.** The Medical Executive Skills Distance Learning Program continues to be presented four to five times a year throughout the MHS. Several of the previous presentations have been developed into distance/distributed learning formats and are presented prior to the formal on-site class via web-based mechanisms. Learning accomplishments of the presentations are measured and reflected in the changes seen from a pre-test and post-test analysis using qualitative questions derived from the material in the on-site and web-based presentations. Future years' plans call for the full implementation and evaluation of the Medical Executive Skills Distance Learning Program to include 10 to 14 on-line modules. Additional studies which will follow on-going research on workforce modeling and quality assurances are expected. Complete on-line registration and student pre-tests were incorporated into two traditional courses this past year and are now routine procedures. It is anticipated that a total of 6 to 8 distance learning modules will be up and running during June of 2002.

**Application of the Tools of Clinical Epidemiology in Health Service Management.** The Center sponsors training programs for senior DoD physicians in the application of the tools of clinical epidemiology in health services management. This program has expanded to include mid-level military health care professionals. Additionally, the Center plans to pursue research in small area analysis regarding visit intervals for chronic diseases; the relationship of costs to visits in the MHS will also be examined.

**The Center for Performance Analysis and the Center for Patient Safety.** The Center staff are developing plans for infrastructure support and funding for their two Centers (Performance Analysis and Patient Safety). Plans are also included for the development of the capability of the Center to access and evaluate all Federal health care databases; the Center for Patient Safety applied for grant support from two organizations during 2001.

#### **The Center for Military Medical Analysis and Projection.**

**Mission.** The Center for Military Medical Analysis and Projection provides a focus of expertise and experience in military medical data analysis and projection for research, consultation, validation, and education relating to the incorporation of available data into decision-making processes. The Center conducts epidemiologic

research in military health, particularly relating to the hazards of military training and deployment, medical and health surveillance, and health data quality, coherence, and relevance to disease prevention and medical readiness evaluation. Most of this research focuses on the consolidation and evaluation of existing health, medical, and personnel information, rather than on generating new data. The Center provides opportunities for students and others to participate in specific projects, analyses, and evaluations. The Center works closely with the Center for Force health Protection Studies. **David H. Trump, M.D., MPH, CAPT, MC, USN, Associate Professor, USU SOM Department of Preventive Medicine and Biometrics, serves as the Director of the Center.**

**Center Activities.** Nine areas of study were conducted during 2001, as reported in the Center's activities summary for 2001.

**The Assessment of Field Exposure to CS Gas (ortho-chlorobenzalamalonitrile) in United States Marine Amphibious Reconnaissance Training.** Although funding ended in September of 2000, a study to provide an estimate of the levels of CS gas to which the trainees were actually exposed was completed and a manuscript submitted to the Journal of Applied Occupational and Environmental Hygiene; the case report of the original CS exposure in Marines was submitted to Military Medicine.

**A Review of Syphilis Data, 1987-1999, in Navy and Marine Corps Personnel.** This was an unfunded project; the Center authors completed their analysis of syphilis cases reported among Navy and Marine Corps personnel and submitted a manuscript to Military Medicine.

**Alcohol Use in Military Personnel and Military Readiness.** This was an unfunded project; the Center investigators and their collaborators completed a study and prepared a manuscript entitled, "Mission Readiness and Alcohol Consumption among U.S. Navy Shipboard Sailors." Also, a USU MPH student completed a secondary analysis of the 1998 DoD worldwide survey of health behaviors to explore the relationship between alcohol use and risk-taking sexual behaviors; this manuscript awaits Navy public affairs clearance.

**Post-Deployment Self-Assessment of Health.** The Center investigators initiated a research project to examine military members' self-assessment of health at the conclusion of a deployment and their subsequent health outcomes and health care use; they have analyzed data from over 17,000 military members who returned from deployments in 1999. The DoD Medical Surveillance System (DMSS) provided person-level data from DD Form 2796 Post-Deployment Health Assessment, military personnel systems, and military in-patient and out-patient data reports. CAPT Trump presented a poster at the Fourth Annual Army Force Health Protection Conference, held in Albuquerque, New Mexico; and, he gave an oral presentation for a USU faculty seminar. A manuscript is in preparation; CAPT Trump will pursue additional USU grant funding to continue this line of research.

**Collaboration with the Veterans Affairs Medical Center (VAMC), Washington, D.D., Center for the Study of War-Related Illnesses (CSWRI).** The VAMC proposal to establish a center of excellence for research, education, risk communication, and clinical care in deployment/war-related illnesses was approved by

the Department of Veterans Affairs. Initial funding of the VAMC CSWRI is for approximately \$5 million over three years. USU collaboration will be in the areas of epidemiologic research and the development of clinical education experiences for medical students and residents at VAMC and through clinical simulations.

**Toxicological Assay Methods and Chemical Exposures among Marines in the Gulf War.** CAPT Trump is a co-investigator on this Naval Medical Research Center/Centers for Disease Control and Prevention study. Pre- and post-deployment sera collected from a cohort of United States Marines during the Gulf War will be analyzed for selected toxic chemicals and mixtures using newly developed biomonitoring/biomarker methods and models. The United States Army Medical Research and Materiel Command has funded the study through 2002.

**Navy Occupational Lung Disease Assessment Project.** Two Center investigators are members of the DoD advisory committee for the Congressionally-mandated Navy Occupational Lung Disease Assessment Project. This study is being conducted by the Naval Health Research Center (NHRC) and the Armed Forces Institute of Pathology (AFIP). USU hosted the initial meeting of the NHRC and AFIP investigators, the civilian scientific and public policy advisory committees, and the DoD advisory committee on September 10-11, 2001. This study is funded through 2002.

**Exertional Heat Illness in Marine Corps Basic Training.** During 2001, an article entitled, “Long-Term Follow-Up after Exertional Health Illness During Recruit Training,” was published in Medicine & Science in Sports & Exercise, Volume 33, pages 1443-1448. This work was the product of projects funded in prior years. Numerous other manuscripts related to exertional heat illness in Marine Corps recruit training have also been produced. For example, Center investigators completed a book chapter, “Clinical Diagnosis, Management, and Surveillance of Exertional Heat Illness,” for the Textbook of Military Medicine volume entitled Medical Aspects of Harsh Environments.

**Preventability of Exercise-Related and Infectious Disease Deaths.** This grant from the Global Emerging Infections Systems, Walter Reed Army Institute of Research, provided starter funds for the collection of medical information on all deaths of military members on active duty. Funding through USU and the Center ended in September of 2001. The project will continue under the auspice of the MoD Medical Mortality Registry at AFIP.

### **The Center for Oral Health Studies.**

**Mission.** The Center for Oral Health Studies provides oral health care services information and dental public health education to the DoD, the TriService Dental Corps Chiefs, and other interested organizations. The Center gathers, synthesizes, and distributes management information needed to develop oral health care policies and programs necessary to optimize the oral health of DoD beneficiaries and the dental readiness of service members. **Andrew K. York, DMD, MPH, CAPT, USN, DC, serves as the Director of the Center for Oral Health Studies.**

**Center Activities.** The Center has continued to be very active in two major areas: 1) the DoD Dental Patient Satisfaction Survey; and, 2) the 2000 TriService Recruit Comprehensive Oral Health Survey. The Center is responsible for the administration, analysis, and reporting of data from the DoD Dental Patient Satisfaction Surveys which are administered at 260 Dental Treatment Facilities (DTFs) worldwide. Each DTF returns approximately 100 completed surveys each month; and, over 415,000 surveys have been analyzed since September of 1999. The survey instrument takes advantage of optical scanner (bubble sheet) technology to facilitate data collection and analysis. Each of the 260 DTFs has a designated local survey administrator who is responsible for the distribution and collection of the 100 surveys each month. The Center developed and deployed a PC-based software tool for the survey administrators to use to ensure that a random sample of patients is selected each week to complete the survey immediately following their dental appointments.

The DoD Dental Patient Satisfaction Survey is currently an integral part of the measurement of overall Military Health System (MHS) performance. The quarterly results for each DTF, regional commands, services, and the MHS are reported on the TRICARE Operational Performance Statement (TOPS). The web site is [www.tricare.osd.mil/reptcard/tops/topsrept.html](http://www.tricare.osd.mil/reptcard/tops/topsrept.html). TOPS allows each organizational level to benchmark against other facilities, both military and civilian; and, TOPS also identifies trends from one quarter to the next. TOPS and the DoD Dental Patient Satisfaction Survey are effective in assisting the MHS in its continual efforts to improve performance in the delivery of dental care and services.

The 2000 TriService Recruit Comprehensive Oral Health Survey was conducted from January through July of 2000. The calibration course for the dental examiners was held in Bethesda, Maryland, during December of 1999; and, it was conducted by the USU Center. Over 4,300 Recruits were examined during this time frame at seven different sites. The sites were Lackland Air Force Base, Texas (Air Force); Fort Knox, Kentucky (Army); Fort Leonard Wood, Missouri (Army); Fort Jackson, South Carolina (Army); Great Lakes Naval Training Center, Great Lakes, Michigan (Navy); Marine Corps Recruit Depot, Parris Island, South Carolina (Marines); and, the Marine Corps Recruit Depot, San Diego, California (Marines). This survey allows for a direct comparison of the 1994 Survey of Recruits to determine if there are differences in oral health levels, prevalence of tobacco use, level of education, and dental readiness. In its summary of 2001, the Center reported that the overall DMTF Index for 2000 Recruits was 5.4 and for the 1994 Recruits it was 6.6. This indicates that overall, the 2000 Recruits had less **(D)**ecayed, **(M)**issing, or **(F)**illed **(T)**eeth than the 1994 Recruits.

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**The USU School of Medicine Department of Military and Emergency Medicine and the Casualty Care Research Center.**

**The CCRC Mission is to serve as a unique national resource by providing quality research, education, and expertise in the delivery of good medicine in bad places.**

- Mission Statement Approved by the President, USU, 1995.

Establishment and Mission. The Casualty Care Research Center (CCRC) was established in July of 1989 under the USU SOM Department of Military and Emergency Medicine as a center of excellence for injury control and casualty care research.

In keeping with the overall mission of USU, the scope of the CCRC activities includes the following: 1) conducting research and investigations on issues relating to injury control, casualty care, operational, and disaster medicine; 2) providing a disciplined, educational, research experience in combat casualty care, injury epidemiology, trauma management, and related areas to medical students, graduate physicians, and other uniformed medical personnel; 3) serving as a repository of resources and information relating to injury control, injury epidemiology, and operational medicine for the Uniformed Services; and, 5) providing research, resource and educational support, technical assistance, and other community service to USU, the Uniformed Services, and other Federal, state, and local elements. The Center operates entirely on extramural funding; it employs 11 full-time personnel and is supplemented by 19 part-time civilian volunteers and military officers loaned on an intermittent basis by their parent commands. Personnel within the USU Department of Military and Emergency Medicine participate in various activities of the CCRC based on their professional interests and as their teaching and clinical responsibilities permit. The Center's efforts fall into three categories: research, training, and consultative/operational support. **Mr. Joshua Vayer, Research Assistant Professor, USU SOM Department of Military and Emergency Medicine, serves as the Director for the Center.**

Core Military Competency. The location of the CCRC within the multi-Service environment of USU with its emphasis on education and development, scientific studies, research, and on-going clinical and operational practice is critical to the development and sustainment of the CCRC's ability to maintain its core competency - **the capability to provide military-unique, medical expertise and experience required by both uniformed and civilian emergency/health care responders to weapons of mass destruction (WMD)-related and other national security contingencies.** Only DoD has a self-renewing source of physicians and other medical personnel with interest and experience in these areas. USU, through its students at both the undergraduate and graduate levels, and its career-focused faculty and staff, plays a vital role for the DoD in the renewal process of militarily-focused and experienced health care providers. The University ensures continuity and leadership for the MHS; and, the CCRC's core competency plays an essential role in that equation.

Contributions to Homeland Security - The Integrated Medical Response Program. Since 1989, the CCRC has successfully served as a bridge between DoD and Civilian Emergency Responders for the coordination and sharing of critical, military-unique medical knowledge, technology, and expertise. Initially, the CCRC Program

was a cooperative effort between USU, the Department of Defense Office of Drug Enforcement Policy and Support, the Henry M. Jackson Foundation for the Advancement of Military Medicine, and the Department of Interior, United States Park Police Special Forces Branch. From 1990 through 2001, the CCRC Program was continuously funded by the Office of Drug Enforcement Policy and Support which reports through the Assistant Secretary of Defense for Special Operations/Low Intensity Conflict. Currently, the Program has been supported through special congressional funding for Chemical/Biological/Radiation/Nuclear/Explosive (CBRNE) Training. The Program's policies are governed by a Board of Directors representing military medicine, law enforcement, and pre-hospital care communities.

The Program focus is on crisis management response to: weapons of mass destruction (WMD); counter terrorism; protective operations; hostage rescue; explosive ordnance disposal; maritime operations; civil disorder; and, major national security events. To date, the CCRC Program has trained over 5,000 civilian emergency personnel from 750 agencies through collaborative support agreements with law enforcement organizations from all 50 States, the District of Columbia, Guam, and Puerto Rico. Forty local, state, and Federal law enforcement agencies mandate this CCRC certification-based training as a condition of employment for their SWAT medics. It teaches skills which reduce the risk of death or serious injury during counter terrorist operations, drug raids, hostage situations, and other high risk operations. This Program has received the endorsement of and/or continuing medical education credit from: The National Tactical Officers Association; the National Association of Emergency Medical Technicians; and, the Continuing Education Coordinating Board for Emergency Medical Service. The Program provides military-unique, national standard, assessment-driven curricula; certification; and, a quality assessment process that exists nowhere else. Its unique Special Operations Injury Epidemiology Database, the only database of its kind, ensures both effectiveness and relevance during the generation of assessment-driven curricula; and, it provides information/data for research on injuries incurred during the crisis management of domestic contingency operations. Thus, the data derived through this CCRC Program is utilized by DoD to explore the epidemiology of injury and the impact of various medical interventions.

The Program's maturing relationship with the law enforcement community has resulted in the transfer of valuable knowledge, experience, and technology for military medical application. This information is used to guide the educational components of the CCRC Programs and to explore similarities and differences between the experiences of the civilian law enforcement communities and the military special operations forces. For example, during 1996, these collaborative efforts led to a significant change/enhancement in the training programs for the Navy SEALs.

As the CCRC's largest training program, The Integrated Medical Response Program offers the following medical/evidence-based courses: EMT-Tactical; the Advanced School; the Commanders Course; the Medical Directors Course; and, the Instructor Development School. These CCRC courses receive maximum attendance. For example, the Medical Directors Course, presented at the 2001 Annual Meeting of the National Association of EMS Physicians, received unprecedented attendance. Participants in these courses also include medical students, graduate physicians, special operations medics from all of the Services, and selected Federal law enforcement medics. **The location of this CCRC Program within the University ensures academic oversight and credibility for the Congressionally mandated collaboration between DoD and the civilian emergency personnel community.**

WMD Scientific Training Programs. The CCRC provides a family of seven WMD medical educational programs to meet the needs of a variety of communities. These include **Responding to WMD for Health Care Facilities**, **Responding to WMD for Health Care Providers**, and **WMD Awareness: What Everyone Needs to Know**. These programs have been highly acclaimed because of their effectiveness and efficiency; and, they are being reviewed as a model for Military Treatment Facility (MTF)-based training.

The Wound Data and Munitions Effectiveness Team (Vietnam) Database (WDMET) - A Unique Resource. The Wound Data and Munitions Effectiveness Team (Vietnam) database (WDMET) is maintained by the CCRC. It contains information on the tactical engagement, weapons employed, resulting injuries, and treatment in the pre-hospital and hospital environments on approximately 8,000 combat casualties. It is the only collection of its kind in the world. Photographs, medical records, X-rays, recovered bullets and fragments make this a unique resource which has been studied extensively, resulting in numerous scholarly publications since the establishment of the Center.

CCRC Mission Support Center - Consultative Support. In agreement with the philosophy that teachers and scholars must maintain an active practice in their areas of expertise to ensure competency, the Operational Medical Support Programs of the CCRC provide consultation and support to multiple organizations, including the White House Medical Unit, a considerable majority of the Federal law enforcement community, and numerous national security contingencies. These activities are carried out under appropriate Memoranda of Understanding. On the average, the CCRC Mission Support Center responds to at least one request for support each day; it is staffed by uniquely trained personnel who provide medical informatics, consultation, planning, and threat assessment support on a round-the-clock basis. These support-related activities serve as a suitable vehicle for USU faculty, both billeted and off-site, to develop and maintain their expertise in operational medicine. Participation in actual missions lends important credibility to teaching and research and provides a living laboratory where concepts, techniques, and technology can be evaluated. The Secretary of Defense commended the CCRC for its contingency support of the Republican National Convention, the Presidential Inaugural, and the direct service support to the Departments of State, Treasury, Interior, and Justice. Based upon the similarities between military medicine and selected types of civilian emergency medical support, lessons learned can be applied from one to the other. The increasing frequency of military operations other than war, including responses to terrorist activities, makes the law enforcement special operations experience critically relevant to military medicine.

CCRC Emergency Medicine Resident Rotation. The CCRC's Emergency Medicine Resident Rotation in Operational Medicine Course, initiated in 1992, is a five-week elective for military emergency medicine residents. Seventy-five active duty emergency medicine residents, six active duty staff physicians, and two physician assistants have completed the course. It consists of successful performance in the one-week Counter Terrorism Operational Medical Support School and four weeks of temporary duty at the CCRC. While assigned to the CCRC, the emergency medicine residents deploy on actual support missions, complete short research projects, and generate "white papers" on topics such as antibiotic selection, malaria prophylaxis in high risk special operations, and field laboratory diagnostics for chemical, biological, and radiological incidents. In 1998, the three Surgeons General suggested that the elective be made a required rotation for all military emergency medicine residents.

CCRC Military Medical Field Studies Rotation. The Military Medical Field Studies Rotation at the CCRC accommodates up to twenty first-year medical students with prior service for the required military experience between the first and second years of medical school; if required by the Services, this number could be increased. Up to six fourth-year medical students complete an elective rotation in operational medicine research at the CCRC each year; again, the number of students could be increased if required by the Services. The operational experiences of the CCRC Medical Support Teams are integrated throughout the medical school curriculum as tangible demonstrations of the medical science being taught. For example, a large part of the USU SOM curriculum on blast injury uses the first-hand experiences of the CCRC faculty acquired during their response to the embassy bombings in East Africa.

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## **USU School of Medicine Department of Military and Emergency Medicine and the Center for Disaster and Humanitarian Assistance Medicine.**

Establishment and Mission. The Center for Disaster and Humanitarian Assistance Medicine (CDHAM) was established in September of 1998 under the USU SOM Department of Military and Emergency Medicine to advance the understanding and global delivery of disaster medical care and humanitarian assistance. The Center ensures specialized expertise, consultation, training, education, and research for medical support activities which impact homeland defense, terrorism and disaster response, and humanitarian assistance.

Uniquely positioned as an academic center within USU, CDHAM is actively developing relationships with governmental, non-governmental, and private volunteer organizations. The Center serves as a focal point in the Military Health System for: new developments in the areas of disaster and humanitarian assistance medicine; improving relief efforts; augmenting the training of military medical officers; and, providing humanitarian assistance. The CDHAM is actively engaged in various studies supported by the Department of Defense, the military Commanders in Chief (CINCs), and other Federal agencies. Personnel within the USU Department of Military and Emergency Medicine participate in various activities of the CDHAM based on their professional interests and as their teaching and clinical responsibilities permit. **Craig H. Llewellyn, M.D., Professor and Former Chair, USU SOM Department of Military and Emergency Medicine, serves as the Director for the Center.**

The CDHAM uses training, technology, and best management practices to improve military medicine's capabilities and readiness for humanitarian missions, especially in partnership with the inter-agency process, the international medical community, and the host nation medical infrastructure and beneficiary populations. The CDHAM works closely with the Unified Commands as its primary mission. Such efforts generally involve direct liaison with other DoD humanitarian assistance centers such as the Center of Excellence (COE) for Disaster Management and Humanitarian Assistance under the United States Pacific Command (USPACOM) in Honolulu, Hawaii, and the Center for Disaster Management and Humanitarian Assistance (CDMHA) under the United States Southern Command (USSOUTHCOM) in Miami, Florida.

In conducting studies and operations concerning local and global relief efforts, the CDHAM also works to expand relationships with other United States government agencies such as the Office of Foreign Disaster Assistance (OFDA) and the United States Agency for International Development (USAID), as well as international organizations such as the Pan American Health Organization (PAHO) and the World Health Organization (WHO). A summary of the CDHAM's activities during 2001 follows.

### Research and Operations.

**Measures of Effectiveness.** The DoD has the World's finest deployable medical system, and as such, it is routinely engaged in providing international medical humanitarian assistance. Scenarios in which military personnel provide medical humanitarian assistance range from deliberately planned theater engagement activities, to contingency operations, and complex human emergencies and military operations other than war. **The CDHAM Measures of Effectiveness Study is focused on medical humanitarian assistance** as defined by U.S. Code, Title 10 authority, sections 2561, 401, and 2547, commonly known as Humanitarian Assistance (HA), Humanitarian

Civic Action (HCA), and Excess Property (EP) Programs, respectively. Recommendations from the CDHAM study to improve military medical humanitarian assistance include: joint doctrine planning and evaluation criteria; specific quantifiable measures of effectiveness; better coordination with local and other international providers of health care; project follow-up to determine outcomes; mandatory after-action reporting; and, a user-friendly information retrieval system. These measures, structured within the logical framework approach successfully used by many private and non-government organizations which provide humanitarian health care, can be used with performance metrics to meet recognized performance standards for humanitarian assistance.

**Rapid Assessment.** The analysis of DoD personnel involved in conducting rapid assessments following natural and man-made disasters describes a CDHAM study sponsored by the Office of the Assistant Secretary of Defense, Special Operations Low Intensity Conflict, Peace Keeping and Humanitarian Assistance (OASD SO/LIC). The efficient means of assessing the effects of a disaster event are essential for directing coordinated relief efforts. **Rapid assessments document the immediate needs of an affected population, the ability of local authorities to meet those needs, and actions which should be taken by the international community to support the local authorities.** The priorities of the rapid assessment are to determine what has to be accomplished in the immediate future to alleviate suffering, to prevent loss of human life, and to lay the foundations for a cohesive and effective disaster response. While DoD assets can be tasked to conduct disaster assessments and can be an integral part of international disaster response efforts, there are strict guidelines governing the use of DoD personnel and assets in disaster relief operations.

**Gorgas Laboratory.** A collaborative study between the CDHAM and the Instituto Conmemorativo Gorgas de Estudios de la Salud is being funded by the United States Southern Command to identify possible health research improvements and capacity enhancements to strengthen the local capacity for prevention and response before, during, and following man-made or natural disasters. The goal of the study is to support the development of national and regional capabilities and cooperative training activities, as well as to strengthen the United States government programs in Panama in areas such as: disease and injury surveillance; prevention of infectious diseases; humanitarian and disaster relief assistance; and, control of health threats associated with the accidental/incidental release of hazardous substances and toxic industrial compounds.

**Donation of Excess Medical Property to Mexico.** The CDHAM oversaw the donation of over \$2.5 million in excess medical property warehoused in DoD facilities in Pennsylvania to the Mexican Red Cross, the Children's Hospital, and the General Hospital in Mexico City, Mexico. This project represented the culmination of over two years of efforts in support of the United States Joint Forces Command. The humanitarian donation of medical and non-medical items of equipment and supplies, especially disaster preparedness items, to civilian organizations providing humanitarian relief and emergency medical services, especially post-disaster, has helped the CDHAM and USU to develop cooperative relationships with military medical personnel in Mexico.

Telemedicine Operations and Technology Cell. The CDHAM serves as a clearinghouse for pertinent information related to all areas of disaster medicine and humanitarian assistance. The Center maintains access to expertise in the field of telemedicine and medical informatics as it relates to the austere environment. Some current, and recently completed, activities are described below.

**Mercy Project.** The Mercy Home Health Project sought to determine if telemedicine could be used for home health care monitoring and for general military service. Equipment was selected under the following requirements: ability to meet all safety requirements; capability for home use; simplicity of use for individuals not trained in the use of computers; provision of a data collection schema for the consulting health care provider and the patient; requirement of little or no cost for the patient; capability of integral video teleconferencing; and, physiological parameters as outlined within the proposal. This project demonstrated that using non-complex telephone system technologies is possible and that the volunteer patient response was overwhelmingly positive.

**Yemen De-Mining Project.** The United States Central Command established the Yemen National De-Mining Project, Victims Assistance Program Office as a fundamental component of its operations to help in the assessment and distribution of directed victim assistance. Personnel from the CDHAM assisted in developing the office under a memorandum of understanding between the United States Central Command Humanitarian De-Mining Office and USU. The effort includes: a Victim Injury Data Collection database developed by CDHAM to input, store and retrieve injury and disability information; medical training and deployment for planning; site visits to assess medical facilities; and, training of medical personnel in the treatment of specific types of landmine injuries. A Fiscal Year 2001-2002 plan to support on-site ophthalmological surgery teams had to be cancelled due to the terrorist bombing of the USS COLE. Proposed future activities to be conducted by the CDHAM, after appropriate security measures are resumed, will be to supplement the ophthalmological training component of the Victims Assistance Program.

**Telemedicine for the Mexican Medical Military Academy.** Current portable information technology information systems are well suited for integration into any disaster management kit due to their size and affordability. Uniquely positioned to introduce information technology systems, the CDHAM has a proposal to demonstrate state-of-the-art, lightweight and durable telemedicine systems for use in austere disaster response settings to the Mexican Medical Military Academy (La Escuela Medico Militar de Mexico). The program will include three days of instruction in the operation and clinical application of telemedicine systems in disaster and other humanitarian assistance operations.

**Eritrea Landmine Project Proposal.** For 30 years, Eritrea fought to gain its independence from Ethiopia. During this time, landmines were used extensively throughout the nine provinces of the country. The United States Central Command is re-initiating plans to develop a truly effective humanitarian de-mining organization. Under CDHAM's existing memorandum of understanding with the United States Central Command, a proposal to assess host nation treatment facilities/capabilities in mine-populated areas is under development. Several non-government organizations have expressed interest in collaborating with the United States Government to support developing a program to address the needs of persons with landmine injuries. The mine injury data collection process used in the Yemen military health care system attracted key international donors. A rehabilitation system developed by Movement and Sports Specialists, Inc., which improves physical rehabilitation of mine amputees through the use of new prosthetics, has also been installed at the Handicap International facilities in Aden and Taiz and in the Physiotherapy Department of the Aden General Hospital. The CDHAM hopes to be able to commit further humanitarian and rehabilitative assistance for landmine victims throughout the region.

## Training.

**Combined Humanitarian Assistance Response Training (CHART) Course.** The CDHAM hosted training for 120 attendees for the CHART Course in May of 2001. Over 110 certificates of training, as well as continuing medical education credits, were awarded to military and non-military attendees from various in-country and overseas commands, including physicians from at least three foreign governments training in the United States. The CDHAM staff also participated in an organizational meeting sponsored by the Office of the Assistant Secretary of Defense, Special Operations Low Intensity Conflict, to review CHART training and to communicate new ways for the Center of Excellence to present the CHART Course.

**Medical Preparedness for Manmade Disasters.** The CDHAM hosted a three-day, pre-conference symposium for community emergency/first responder civil authorities, border health workers, and military personnel of the United States and the Mexican Armed Forces as part of the 59th Annual Conference of the United States-Mexico Border Health Association. While global medical communities have a growing understanding, capacity, and capability to provide life-saving care following natural disasters, the unique challenges of man-made disasters, ranging from accidents to terrorism, and from hazardous materials exposures to emerging infections, pose new challenges to science, medicine, and international partnerships. Speakers invited to address the symposium examined recent man-made disasters through the use of case studies and lessons learned, and evaluated fundamentals of emergency medical planning and practice. Over 75 persons shared experiences during the symposium in order to gain an understanding of “first principles” which may be common across events and cultures.

**Military Medical Humanitarian Assistance Courses.** Using the model of a course developed by the USU SOM Department of Pediatrics, the CDHAM is funding the development of a family of specialty-specific, intensive, three-day courses across the spectrum of medical, nursing, and veterinary medicine specialties. A one-day symposium was held during which Program Directors from at least seven of fifteen subspecialties provided status reports on efforts to develop training courses. The information presented included dates of pilot course presentations, “beta” course presentations, and estimated project completion, as well as plans for the submission of final course materials. When finished, the CDHAM will promulgate courses on-line to support the education and training of personnel for participating in humanitarian or disaster relief activities.

**Kerkeshner and Bushmaster.** The CDHAM supports the education of USU medical students during the first year of medical school (Kerkeshner) and fourth year (Bushmaster) operational training courses. Live demonstrations of telemedicine equipment and medical informatics in relation to the austere environment are presented under actual field operating conditions.

**Public Service Recognition Week.** The CDHAM staff participated in two days of hands-on demonstrations for the public during the annual Public Service Recognition Week hosted by DoD on the Mall in Washington, D.C. Demonstrations of telemedicine equipment and medical informatics as it relates to the austere environment were provided to the thousands of visitors who participated in the Public Service Recognition Week.

CDHAM Consultative Support. Telephone and on-site consultation are available for organizations requiring timely expertise in all phases of disaster mitigation. Aid with response planning, vulnerability assessment, needs assessment, medical care, and epidemiological surveillance are available.

**Memorandum of Understanding with the Center for International Emergency, Disaster and Refugee Studies.** A memorandum of understanding was implemented between the CDHAM and the Center for International Emergency Disaster and Refugee Studies at Johns Hopkins University in Baltimore, Maryland, to establish institutional support, education and training programs in humanitarian assistance, disaster relief and management, weapons of mass destruction management, and civil-military operations. This agreement will provide opportunities for both institutions to benefit from a balanced civilian/military class representation in educational and training venues and will ensure participation in joint research initiatives addressing critical civilian/military issues.

**Non-Government Organizations Guide.** As part of an apparent need to facilitate coordination of disaster and/or humanitarian assistance relief between DoD and non-government and private volunteer organizations, the CDHAM established a study to identify and categorize the names, locations, and principal activities, and points of contact for major organizations in these categories. When completed, the guide will be promulgated via the CDHAM web site for rapid access by anyone seeking information on organizations which support disaster relief and/or humanitarian assistance activities. As a web-based resource, the information will be updated on a regular basis.

**CDHAM Web Site.** Following the terrorist attacks of September 11, 2001, on the World Trade Center and the Pentagon, the definitions of disaster and weapons of mass destruction were forever changed. Since that event, the need to empower citizens, emergency services, and health care providers through the provision of quality information on the Internet has become critical. At a time when using a search engine to look for references to biological or chemical warfare generates over 400,000 results from nearly 40,000 unique web pages, identifying quality information is a daunting task. The CDHAM has already established a web link on the USU home page to assist in the dissemination of quality information relevant to the medical management of injuries caused by chemical, biological, radiological, nuclear, and/or high explosive weapons used in warfare and terrorism. Sections on disaster preparedness and management and the psychological impact of terrorism and other disasters are included. This web link is a work in progress which will be continuously upgraded with the latest in policy and news. Web mail lists are also being planned to facilitate the exchange of information. On a parallel front, a proposal for a second CDHAM web link has been funded; it will use search engines to mine data across a wide range of international and national, government and private, Internet resources to rapidly point interested users towards critical information for use in planning and responding to humanitarian assistance and/or disaster relief needs on a worldwide basis.

#### Other Activities and Relationships.

**Medical Support following the Earthquake in El Salvador.** The CDHAM provided funding support to three fourth-year USU SOM students who accompanied a United States Air Force Infectious Disease/Public Health Medical Support Team from Wright Patterson Air Force Base, Ohio, to El Salvador. One student, bilingual

in Spanish, assisted the medical officer staff in the triage and treatment of the local patient population. The other two students conducted various support functions as part of the team, ranging from logistics, to the management of medical supplies and coordination of patients seen during the team's ten days of operations in El Salvador.

**Medical Support to a Medical Readiness Training Exercise in Mozambique.** The CDHAM provided funding support to one first-year USU SOM student who participated in a Medical Readiness Training Exercise in Mozambique, Africa. In order to provide a skill as part of the team, the student trained and was certified to administer immunizations to the local patient population.

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## **USU School of Medicine Department of Surgery and the Center for Prostate Disease Research - A TriService Effort.**

Background. The Center for Prostate Disease Research (CPDR) is a United States Department of Defense Program located in Rockville, Maryland. The CPDR was established in 1991 by the United States Congress in an effort to combat the increasing rate of occurrence of prostate cancer. Current figures released by the American Cancer Society reveal that over 198,100 American men will be diagnosed with prostate cancer each year and that approximately 31,500 of those men will die from the disease. The CPDR continues to meet the challenge of discovering new molecular markers in its Basic Science Research Program to combat this “silent killer.” The CPDR is a USU Program which is administered by the Henry M. Jackson Foundation for the Advancement of Military Medicine. The Center is also affiliated with the Armed Forces Institute of Pathology (AFIP) in Washington, D.C., as well as with **nine** TriService Medical Centers around the country. The CPDR, with over 81 researchers and team members (15 active duty military and 66 civilians) is becoming even more widely recognized as one of the most prominent prostate cancer research programs in the Nation and in the World. With the establishment of two endowed chairs for prostate research for the CPDR at USU and the overall endowment funding mechanism administered by USU and the Henry M. Jackson Foundation, the CPDR remains a permanent and significant part of the research endeavors at USU.

Mission. The CPDR integrates basic and clinical science to develop detection techniques and treatments for prostate cancer and disease. The CPDR is unique in that it incorporates multiple and distinct areas of prostate disease research into one comprehensive program: the Clinical Research Center; the TriService, MultiCenter National Prostate Cancer Patient Database; the Basic Science Research Program; Education and Training; and, the Prostate Cell Center of the Basic Research Program. **Judd Moul, COL, MC, USA, Urologic Oncologist, Walter Reed Army Medical Center (WRAMC), Professor, USU SOM Department of Surgery, and David G. McLeod, COL, MC, USA, Urologist, Walter Reed Army Medical Center (WRAMC), Professor, USU SOM Department of Surgery, serve as the Directors of the Center for Prostate Disease Research.**

### Center Activities During 2001.

**Clinical Research Center.** The CPDR Clinical Research Center located at the WRAMC in Washington, D.C., combines prostate screening, data collection, clinical diagnosis, education and counseling, as well as prostate disease clinical trial research in a distinctly patient-oriented setting. In the Clinical Research Center, **CPDR Directors, Colonel Judd W. Moul, MC, USA, Professor, USU SOM Department of Surgery, and Colonel David G. McLeod, MC, USA, Professor, USU SOM Department of Surgery,** and their team provide state-of-the-art care to military beneficiary patients affected by prostate disease, while particularly emphasizing enrolling military beneficiaries in clinical trials.

**TriService, MultiCenter National Prostate Cancer Patient Database.** The CPDR Patient Database is one of the largest, most comprehensive prostate cancer patient databases in the country. After informed consent, patients provide comprehensive data about their care which is maintained in a state-of-the-art relational computer database. **Leon Sun, M.D., Ph.D., MultiCenter Database Administrator, Research Assistant Professor,**

**USU SOM Department of Surgery, and Colonel Judd W. Moul, MC, USA,** direct this monumental project which is administered by principal investigators and database managers at nine TriService Military Medical Centers across the Nation. **The CPDR database has evolved into a valuable research tool for both clinicians and scientists working in the field of prostate disease. Currently, there are almost one-half million records on over 14,000 patients in the database.** Recently, CPDR was awarded a 3-year (2002 through 2005) DoD Prostate Cancer Research Program (PCRP) Grant in the amount of \$410,000 to add technological advancements to the CPDR TriService Multicenter Database. Under the direction of Dr. Leon Sun, these models will be posted on the CPDR web site and accessible to both military personnel and the general public as well.

**Basic Science Research Program.** The Basic Science Research Program, under the direction of **Shiv Srivastava, Ph.D., CPDR Scientific Director, USU SOM Research Associate Professor, Department of Surgery,** studies the molecular genetics of prostate cancer.

For the Basic Science Research Program of the CPDR, 2001 proved to be yet another year of research productivity. Headed by Dr. Srivastava, the Basic Science Research Program of the CPDR now includes over 25 cancer researchers including an Associate Director, five Senior Investigators, a Laboratory Manager, Post-Doctoral Fellows, WRAMC Urology Residents, Research Assistants, and USU Graduate Medical Students. The Basic Science Research Program Team has developed a vigorous long-term research program and unique bio-resources with a team of dedicated researchers to address molecular genetic alterations during the on-set or the progression of prostate cancers. **Collaborative efforts between Dr. Srivastava and Colonel Judd Moul, CPDR Director, have led to the integration of basic and clinical research activities at the CPDR.** This allows the rapid translation of basic research discoveries into the clinical arena (e.g., the evaluation of biomarkers for prostate cancer progression and the identification of new targets for therapy). Also, prostate cancer gene discovery efforts using state-of-the-art global gene expression profiling and positional cloning strategies at the CPDR are uncovering novel gene alterations in prostate cancer.

Notable 2001 highlights include the continued research on PCGEM1, a novel prostate-specific gene originally identified by the CPDR researchers as a gene abnormality thought to be important in prostate cancer. PCGEM1 is a novel non-coding RNA that is over-expressed in about 40 percent of prostate cancer specimens; and, PCGEM1 expression is induced by androgens. Recent experiments have established that over-expression of PCGEM1 has growth promoting effects on NIH3T3 cells. Experiments are underway to define the functions of PCGEM1, which along with another prostate-specific gene, DD3, represents a new class of prostate-specific genes which do not code for a protein and may function as RNA. A comprehensive 3-year study of PCGEM1, supported by a National Institutes of Health RO1 grant (May 2000 through May 2003) is currently underway.

Another highlight is the discovery of PSGR, a highly prostate-and tissue-specific G-protein coupled receptor. It was discovered through the collaborative efforts of the CPDR and Human Genome Sciences. PSGR is over-expressed in about 65 percent of prostate cancer specimens. Adenovirus-PSGR expression vector has been generated to evaluate biologic and biochemical functions of PSGR. Tumor-associated expression of PSGR is evaluated on tissue micro-arrays and by real-time PCR (polymerase chain reaction) assays. Recently, CPDR was awarded a 3-year (2002 through 2005) DoD Prostate Cancer Research Program Grant in the amount of \$440,000. This new grant will be used for further studies of the structure and functions of PSGR and the role it plays in prostate cancer.

Scientists at the CPDR are also focusing on continuing work in the areas of definition of androgen signaling in prostate cancer. Expression profiling (screening of tissue samples for gene abnormalities thought to be important in prostate cancer) of androgen-regulated genes has defined endoplasmic reticulum (ER) stress response pathways as a novel component of androgen signaling in prostate cancer cells. This new discovery has potential to define how male hormones may promote prostate cancer under certain physiologic functions.

**Education and Training.** The CPDR fosters training and educational programs to raise public awareness about prostate disease. It sponsors the *US TOO, Inc. Patient Support Group* at WRAMC, which holds monthly meetings where patients' concerns and questions about prostate disease are addressed. The informal and diverse group of about 30 cancer survivors and wives from different backgrounds and regions provides an opportunity for the cancer survivors and their families to network with other individuals about their cancer and treatments. Each participant introduces himself and gives an account of his fight against prostate cancer. Moderators lead the group and refer participants to resources, relevant lectures about prostate cancer, and other patients or friends they know who have had similar experiences. The US TOO, Inc. Monthly Newsletter is also published on the CPDR web site which can be found at <[www.cpdr.org](http://www.cpdr.org)>. The newsletter lists information about medications and clinical trials as well as names and phone numbers of peer counselors who are willing to listen and tell about their own experiences. US TOO, Inc. can be found in almost every community and can be contacted by the patients or their families for schedules of events, publications, and meetings. In addition, CPDR is actively involved in the education and training of medical students, uniformed residents, and USU Ph.D. students. The CPDR also provides molecular biology education and training for military urology residents and medical and graduate students from USU. Various internships in the Basic Sciences Laboratory and the Multi-Center Database are also available to qualified local high school and university students who are interested in careers in the field of cancer research.

**Prostate Cell Center of the Basic Science Research Program.** The Prostate Cell Center of the Basic Science Research Program is under the direction of **Dr. John S. Rhim, Associate Scientific Director, CPDR, and Research Professor, USU SOM Department of Surgery.** The Prostate Cell Center continues facilitating studies of new prostate cell lines. Established in January of 2000, in the renovated CPDR laboratory at the USU SOM Department of Surgery, Dr. Rhim and his team continue working towards the Center's goal which is the generation and characterization of cell lines from primary tumors of prostate cancer patients as well as normal prostate tissues of the same patients. This also includes cell lines from familial prostate cancer patients. **The Prostate Cell Center also serves as a resource center to provide primary cell cultures of epithelial cells derived from normal and malignant prostatic tissues to the larger scientific research community.** The availability of these cell cultures, as well as derived materials such as RNA, DNA, proteins and conditioned media, facilitates research by other investigators who do not have the means to establish primary cultures themselves. Dr. Rhim and his colleagues from the CPDR reported in leading cancer journals, Cancer Research and Oncogene, the discovery and characterization of two new prostate cancer cell lines.

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**The USU School of Medicine Department of Pediatrics and the Center for Pediatric Molecular Medicine.**

Background. Translational research has become extremely important to the fields of Pediatrics and Pediatric Research. Translational studies are designed to integrate the molecular basis and clinical aspects of disease into a focused investigation. Following the renovation of the Department of Pediatric laboratories in 1999 and 2000, the laboratory of the USU SOM Center for Pediatric Molecular Medicine currently supports all levels of molecular research. The Center's laboratory maintains the following: thermocyclers for polymerase chain reaction (PCR); "real-time" PCR equipment for quantitative PCR; automated immunostaining equipment; and, all of the equipment required for bacterial, viral, and cell culture work, to include small animal studies. The Center for Pediatric Molecular Medicine is available to medical students, house-officers, fellows, and faculty who wish to pursue Pediatric Research. The National Capital Consortium Fellowship Training Programs in the Pediatric Subspecialties of Endocrinology, Gastroenterology, Hematology/Oncology, Infectious Diseases, and Neonatology have extensive research requirements for their fellows and utilize the facilities at the USU SOM Center for Pediatric Molecular Medicine to a significant degree.

Current Activities. The Center for Pediatric Molecular Medicine has supported award-winning studies by USU medical students, residents, and fellows. This year, the prestigious Bockman Award for the most outstanding research by a graduating USU medical student was awarded to **Second Lieutenant Kevin Banks** for a study he performed in the Center. In addition, **Residents of the Pediatric National Capital Consortium Program, Ann M. Straight, Captain, MC, USA,** and **Craig Dobson, Captain, MC, USA,** were awarded travel grants to present their findings at the Lawson Wilkins Pediatric Endocrine Society Meeting. In addition, **Andrew J. Bauer, Major, MC, USA, Fellow, National Capital Consortium Pediatric Endocrinology Program,** was awarded the Thyroid Research Award from the Endocrine Society. **Captain Ann M. Straight, MC, USA,** also received the Howard Johnson Award from the Uniformed Services Section of the American Academy of Pediatrics for the most outstanding research performed by a house officer on active duty in the Uniformed Services of the United States.

This recognition of excellence at all levels, from the local to the international, attests to the quality of science performed at the USU SOM Center for Pediatric Molecular Medicine.

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## **The Establishment of the United States Military Cancer Institute at the University.**

Background/Organization. The United States Military Cancer Institute is a component of USU; the Director of the Institute reports directly to the President of the University. In addition to the USU SOM, other components of the Institute are the Walter Reed Army Medical Center, the National Naval Medical Center, the Malcolm Grow Air Force Medical Center, the Armed Forces Institute of Pathology, and the Armed Forces Radiobiology Research Institute. The Institute has as its objective the enhancement of multi-disciplinary cancer research under the USU aegis; the ultimate goals are to advance the science of cancer prevention, diagnosis, treatment, and research and to achieve designation from the National Cancer Institute as one of the relatively few comprehensive cancer institutes in the Nation.

During 2000, the President of USU requested that a study be conducted reference the desirability and feasibility of establishing a cancer institute at the University. The results of that study were to be reported to the Board of Regents. **John F. Potter, MD, former Director of the Lombardi Cancer Center at Georgetown University**, undertook responsibility for the study. A survey was made in July of 2000, of the existing cancer institutes (centers) at medical schools across the United States. Institutes which met the stringent standards of the National Cancer Institute were found to exist at 45 medical schools; premier cancer institutes have been established at Universities such as Harvard, Yale, Duke, Stanford, and John Hopkins. These centers were established to promote education, research, and patient care.

In-depth interviews were held with University leaders and cancer scientists. These interviews included the Deans of the USU Medical and Graduate Nursing Schools, as well as the Commanding Officers of the Army North Atlantic Regional Medical Command (the Walter Reed Army Medical Center), the National Naval Medical Center, the Malcolm Grow Air Force Medical Center, and the Director of the Armed Forces Institute of Pathology. USU faculty, both basic and clinical scientists, who were identified as cancer-research oriented, were questioned about their teaching, research, and clinical care activities. The interviews showed that all of the military hospital and regional commanders strongly supported the idea of establishing a cancer institute at USU; the USU faculty was also enthusiastic about the concept of a cancer institute. The study also substantiated that the quality of the research of the basic and clinical scientists at USU is outstanding and could support such an endeavor.

A ribbon-cutting official ceremony opened the Headquarters of the United States Military Cancer Institute on June 25, 2001. The Surgeons General, Members of Congress, and Congressional staff attended the ceremony.

Mission. The mission of the United States Military Cancer Institute is to enhance the collaborative relationships among scientists in both basic and clinical research in an effort to address serious cancers which have struck more than 270,000 DoD beneficiaries during the past 14 years. The Institute will ensure quality care and cutting-edge discoveries and technology for the military communities through its capitalization of the talents of the basic scientists at USU to conduct translational cancer research with clinicians in the local military hospitals. **John F. Potter, M.D., Professor, USU SOM Department of Surgery, and former Director of the Lombardi Cancer Center at Georgetown University, serves as the Director of the United States Military Cancer Institute.**

Benefits of the Cancer Institute. Cancer remains a very significant issue for the DoD beneficiaries in the Military Health System. In the past 14 years, DoD beneficiaries have developed more than 270,000 serious cancers. In the past year, there were 1.2 million physician visits, and 11,500 hospital admissions for cancer diagnoses and therapy at a cost of more than \$305 million. The United States, through its many Federal and private institutions, has committed itself toward better access to clinical trials to both improve the quality and the outcome of its fight against cancer, and to bring the DoD closer to reducing this threat to its military and associated communities.

There are a number of benefits which will result from the establishment of the Institute. The Institute will further enhance the academic prestige of USU and would position the University among the premier academic entities in the Nation. As a consequence, student applications to USU would be increased. Medical and nursing students will benefit from their involvement in multi-disciplinary patient care, which is the hallmark of state-of-the-art cancer treatment. The Institute will enhance the collaborative relationships among cancer scientists in both the basic science and clinical areas. The increased public awareness of the high quality of care provided to cancer patients in military treatment facilities will increase the flow of patients to military treatment centers. Post-graduate education must also have large numbers of patients for teaching purposes. This level is being threatened in some hospitals; a cancer institute will increase patient accessions. Moreover, these cancer patients present extremely challenging surgical and medical conditions. Caring for such patients maintains and enhances the skills of staff physicians, residents, and medical students. A cancer institute will stimulate the submission of grant applications to the National Institute of Health and other peer-review entities; an increase of such grant awards would be a clear indication of the high quality of research being conducted at the University. The Institute could also serve as a model for TriService collaboration.

The inclusive study, submitted on August 24, 2000, found that the establishment of the USMCI at USU is highly desirable and would further enhance the University's academic reputation. Given the extent and quality of its resources, such an Institute could well become one of the largest and most prestigious Cancer Institutes in the United States. On September 8, 2000, the USU Board of Regents voted to approve, in principle, the concept of creating the United States Military Cancer Institute at USU.

Achievements of the Institute. Since its inception, the Institute has accepted 65 candidates as members. These basic and clinical scientists have united to form multi-disciplinary research teams. A Committee of Scientific Advisors, composed of nationally distinguished cancer scientists, has met to review the progress of the Institute. At its most recent meeting, the Committee declared that it was impressed with the progress of the Institute and expressed renewed support for the focus of the Institute on cancer prevention and control. This theme was adopted because it will capitalize on the talents of the basic scientists of the USU SOM to conduct translational research with clinicians in the local military hospitals. Also, the wellness concept is in direct compliance with DoD's strategic goal for medical readiness.

**Services Sign Memorandum to Combine Efforts in Cancer Research, Education, and Patient Care.** The Commanders of four local military health care facilities signed a Memorandum of Understanding in February of 2002, to create the first TriService Institutional Review Board for the United States Military Cancer Institute. In the past, the necessity for an investigator to obtain Institutional Review Board (IRB) approval from each institution at which the investigator wished to perform research (which often amounted to the completion of approval processes with four or five entities) served as a substantial roadblock to collaborative research. However,

the signing of an agreement by the Commanders from the Walter Reed Army Medical Center, the National Naval Medical Center, the Malcolm Grow Medical Center, and the President of USU will enable researchers to obtain the required reviews of their research protocols through a more streamlined process. Instead of being required to submit a protocol to the IRB sponsored by each individual institution, a researcher can now make one submission to one integrated Institutional Review Board. This will facilitate the work of the investigators and expedite cutting-edge discoveries and technology for the DoD communities.

**Establishment of a Development Committee.** A Development Committee has been established by the United States Military Cancer Institute. **H. Norman Schwarzkopf, General, USA, Retired, will serve as the Committee Chair.** Other members include **The First Lady of the United States, Mrs. Laura Bush,** and **The Honorable Frank Carlucci, former Secretary of Defense and National Security Advisor to the President of the United States.**

**Congressional Recognition.** Recently, the Congress of the United States recognized the United States Military Cancer Institute and mandated substantial funding for its operations.

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## **USU Establishes an Interdepartmental Center for Space Medicine.**

Background and Establishment. During the past 50 years, space sciences and exploration have evolved from science fiction into scientific accomplishments. The 21st Century will be marked by extraordinary advances in space sciences and travel. In addition, altered gravity and radiation exposure in space present unique research opportunities to further medical knowledge. The Uniformed Services have, from the inception of space medicine, played an important role in the National Aeronautics and Space Administration (NASA) programs. Information sharing and collaborations among these scientists has continued to depend upon individual relationships and agreements. In conformance with the USU mission which includes the training of physicians, advanced nurses, and scientists for the Nation, USU faculty have been engaged with NASA for many years in space-relevant medical research.

The USU Interdepartmental Center for Space Medicine was initiated to: 1) foster interdisciplinary research and education in space medicine; 2) include areas of research such as the biological and psychological effects of extreme environments; and, 3) feature work on the effects of microgravity on cardiovascular, endocrine, neurovestibular, and gastrointestinal functions. The Center now serves as a liaison for space medicine for the University with DoD and government agencies such as NASA, as well as with other universities, research institutions and foundations. The USU Interdepartmental Center for Space Medicine has been located within the USU SOM Department of Medicine. Useful and current information on the USU Center has been available on the Center's web site: <[www.usuhs.mil/csm](http://www.usuhs.mil/csm)> which is hosted by the Department of Medicine and managed by Solomon Levy, Deputy Chair for Administration.

**Working and Executive Committees Are Established.** A Working Committee consisting of over 20 health professionals across numerous disciplines was initially established to facilitate the development and long-term continuity of the Center. Some of the initial members included: 1) **Andre Dubois, MD, Research Professor, USU SOM Departments of Medicine and Surgery**, (Dr. Dubois is currently conducting NASA-funded research regarding gastrointestinal function in space); 2) **Joseph McCabe, Ph.D., Professor, USU SOM Department of Anatomy, Physiology, and Genetics**; 3) **Solomon Levy, MPH, Deputy Chair, Administration, USU SOM Department of Medicine**; 4) **Gregory P. Mueller, Ph.D., Professor, USU SOM Department of Anatomy, Physiology, and Genetics**; 5) **CAPT David Johanson, MC, USN, Assistant Professor, USU SOM Department of Preventive Medicine and Biometrics**; 6) **Patricia A. Deuster, Ph.D., Associate Professor and Director, Human Performance Laboratory, USU SOM Department of Military and Emergency Medicine** (Dr. Deuster is currently conducting research on human endocrinological responses to stress that is relevant to space medicine); 7) **Terry Thomas, Ph.D., USU SOM Department of Preventive Medicine and Biometrics** (Dr. Thomas is currently studying extreme environments); 8) **Victor Schneider, MD, Associate Professor, USU SOM Department of Medicine**; 9) **Neil Grunberg, Ph.D., Professor, Department of Medical and Clinical Psychology** (Dr. Grunberg has conducted NASA-funded research on crew selection for ways to optimize performance and minimize stress); 10) **Richard Holt, MD**; 11) **Helen Santiago, Ph.D., Research Associate**; and, 12) **Roy Clymer, Ph.D.** The complete listing of members can be found at <[www.usuhs.mil/csm/csmcmtlist.htm](http://www.usuhs.mil/csm/csmcmtlist.htm)>. In addition, an Executive Committee, established for assisting and advising the Director of the Center, consists of the Director of the Center and four additional members of the Center; members are appointed by the Director and serve for a three-year term and represent as many academic departments within the SOM as possible.

**Official Inauguration of the Center.** The USU Center for Space Medicine was officially inaugurated at the University on November 21, 2000. The Center's inauguration included **NASA Astronaut Bonnie J. Dunbar, Ph.D., Assistant Director, University Research and Affairs, Lyndon B. Johnson Space Center** who was a featured speaker at the inaugural events for the Center. Her presentation was entitled, "From Apollo to the New Millennium: Human Space Flight Exploration." Also speaking was **NASA Flight Surgeon/Neurologist, CAPT Jonathan B. Clark, MC, MPH, USN, USU Class of 1980, Lyndon B. Johnson Space Center; CAPT Clark's** presentation was entitled, "Clinical Aspects of Space Medicine."

Mission and Leadership. As indicated above, the USU Center for Space Medicine was established to accomplish the following: 1) to encourage multidisciplinary space medicine research among the USU faculty; 2) to provide information about extramural funding opportunities; 3) to encourage and nurture individual research projects in space medicine at USU (e.g., cardiovascular, endocrine, neurovestibular, and gastrointestinal effects of microgravity); and, 4) to provide a Center to interact with other Federal and DoD space medicine programs. **Jay R. Shapiro, M.D., Professor, USU SOM Department of Medicine, and Head of the Bone Loss Team for the National Space Biomedical Research Institute, a NASA funded consortium of institutions working to prevent or solve health problems related to long-duration space travel, serves as the Director of the USU Interdepartmental Center for Space Medicine.**

**Internationally Recognized Director.** Dr. Shapiro is an internationally recognized scientist in the fields of endocrinology and bone loss due to prolonged exposure to microgravity environments. As the Center's Director, he is responsible for the day-to-day activities and administration of the Center; the communication of those activities to the Dean, SOM, and the USU President; and, the implementation, governance, and review of the Center's programs. In addition, Dr. Shapiro also represents the Center on appropriate committees and in appropriate settings as designated by the Dean, SOM, and the President of USU.

Information Transfer. Already existing space medicine information projects at USU include Spaceline (an on-line bibliographic data base of space life sciences research) and the Space Life Science Data Archive (data base from NASA-funded research). The Interdepartmental Center for Space Medicine: 1) communicates within the DoD about space medicine via electronic means and conferences; 2) acts as a liaison for space medicine with the DoD, universities, and other research institutions; and, 3) informs the USU community about space medicine electronically and, through seminars and discussion sessions.

Future Educational Activities. The USU Center for Space Medicine has established its educational activities and goals which include: 1) the education of USU medical and graduate students, faculty, and staff in space medicine; 2) the development of a fellowship in space medicine at USU for physicians in the Armed Forces; 3) the development of a USU postdoctoral space medicine fellowship for biomedical and behavioral scientists; 4) the provision of NASA-approved student summer programs; and, 5) the provision of part-time research opportunities for USU SOM medical students.

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**The TriService Nursing Research Program - A Joint Program Under the Leadership of the Chief of the Army Nurse Corps and the Directors of the Navy and Air Force Nurse Corps.**

Background. Nursing research investigates the many factors known to affect human health for the purpose of developing clinical interventions and activities which can be carried out by nurses. The TriService Nursing Research Program's primary objective is to expand the professional knowledge and expertise of military nurses and to improve the capacity of nurses to provide appropriate and high-quality health care for the Armed Forces.

Military nursing research addresses many areas: 1) the unique military environmental settings in which care is provided; 2) the mission readiness and development of military personnel; and, 3) the improvement of nursing structure (delivery systems) and those processes which enhance clinical outcomes, health status, and the quality of life for the diverse military populations and their beneficiaries (to include those communities which receive care during humanitarian, peacetime, and wartime missions).

The TriService Nursing Research Program (TSNRP) is a Congressionally authorized program targeted to support research conducted by military nurses (S.R. 102-154). Funding is available to all Active Duty, Reserve, National Guard, and retired Nurse Corps Officers. The TriService Nursing Research Program has continued to garner broad support; and, funding has grown incrementally since its inception. The TSNRP is under the direction of the Chief of the Army Nurse Corps and the Directors of the Navy and Air Force Nurse Corps. The continuing investment of resources and support for military nursing research has yielded valuable results; and, uniformed nurse investigators have begun to expand the scientific foundation for military nursing.

Mission. The mission of the TriService Nursing Research Program is to provide resources for the conduct and use of research to foster excellence in military nursing care. The program goals are to: 1) increase the capacity of military nursing research; 2) expand the breadth and depth of the nursing research portfolio; 3) develop partnerships for collaborative research; and, 4) build an infrastructure to stimulate and support military nursing research.

The TSNRP has designated five areas of research: 1) Deployment Health; 2) Developing and Sustaining Competencies; 3) Recruitment and Retention of the Work Force; 4) Clinical Resource Management; and, 5) Military Clinical Practice and Outcomes Management. Each of these areas can provide valuable clinical outcomes to enhance the care delivery systems for soldiers, sailors, airmen, and their families.

Resource Center for Excellence in Military Nursing. The Resource Center for Excellence in Military Nursing was established in 1997, through a grant to strengthen and expand the capacity of military nursing research into the future. This is in alignment with the recommendation of the 1996 Institute of Medicine Report to establish centers of excellence in military nursing research as part of the TSNRP's organizational structure. The establishment of the Resource Center for Excellence in Military Nursing is regarded as essential for ensuring the future success of military nursing research as well as the TriService Nursing Research Program. The major goals of the Center are to: 1) provide military nurse researchers with a repository of information for use in

designing, implementing, and disseminating military nursing research; 2) improve the quality and quantity of proposals submitted by military nurse clinicians; 3) facilitate the implementation of research findings into clinical practice; and, 4) promote the timely dissemination of military nursing research findings.

Investigator Initiated Grant Awards. All proposals submitted to the TSNRP for funding are subject to rigorous, peer-review designed to evaluate both scientific and programmatic merit. The Scientific Peer-Review Panel consists of scientists who are selected from the health care community; their selection is based on research experience, publications, and work experience. The panel evaluates the scientific and technical merit of each proposal.

The TSNRP Advisory Council, comprised of one representative from both the Active Duty and Reserve components from each branch of the Military Services, conducts the programmatic review. Council members assess the likelihood that a proposed study will meet TSNRP goals and priorities. Proposals must receive the approval of both the Scientific Peer-Review Panel and the TSNRP Advisory Council in order to be recommended to the Corps Chief and Directors for final approval. Since the establishment of the TSNRP in 1992, a total of 212 proposals have been funded. These research studies have focused on 16 major areas: 1) human response; 2) access to care; 3) women's health; 4) deployment health; 5) professional roles; 6) systems/delivery systems; 7) training/competencies; 8) outcomes; 9) military clinical practice; 10) operations (decision making); 11) equipment/technology; 12) complementary medicine; 13) risk behavior; 14) family health; 15) pain; and, 16) prevention/health promotion. The three most frequently cited areas were outcomes management, clinical practice, and equipment/technology.

Study areas which have been funded include: burns care; breast cancer care; wound healing; pain; tobacco use; depression; Reserve readiness; pregnant soldier intervention programs; informatics; econometrics; managed care environments; tele-health; nurse-managed clinics; and, distance learning. During 2001, 11 investigators were awarded funding. Selected examples of these studies include: the retention of trauma resuscitative skills in the field; increasing testicular examinations; pharmacokinetics and ginger safety; medication error reporting; work environments within Army hospitals and nurse-rated quality of care; bone density in female adolescents and the use of depot medroxyprogesterone; and, the role of the AVP receptor, Vasopressin Activating-Calcium Mobilization (VACM-1) in dehydration and hemorrhage.

Special Requests for Applications. Special Requests for Applications (RFAs) are occasionally made available by the TSNRP. RFAs have included distance learning projects, skill sustainment projects, studies on evidence-based care within the military health care system, retention and recruitment, and deployment health. Nineteen studies have been funded as a result of four RFAs.

Dissemination of Findings. Dissemination of findings to nurses in a global setting is a specific challenge being met by the TSNRP. The first dissemination conference held in August of 1997, brought military nurse researchers representing the three Services throughout the World. The conference provided a forum for the exchange of ideas, the discussion of critical issues, and reporting on research findings. TSNRP nurse researchers have disseminated their research findings at various conferences throughout the United States and abroad, to include the American Heart Association, the Aerospace Medical Association, the National Institute of Nursing Research Forum, the International Women's Health Conference, the Asia-Pacific Military Medicine Annual Conference, and the annual conference of the Association of Military Surgeons of the United States (AMSUS).

Results of TSNRP funded studies have been reported in refereed nursing and other health journals and by the national news media as well. Recently, STAN, the virtual reality simulator used in skills training at the Lackland Air Force Base in Texas, was featured in an Air Force Times news article. This simulated skills training project is part of the study, "Wartime Competencies and the United States Air Force Nurse: Training for Sustainment," currently being funded through the TSNRP.

Dissemination is imperative for the success of the program. Research findings from final reports are also found in the special interest category of the Cumulative Index to Nursing and Allied Health Literature (CINAHL) database.

Future Direction. The future of military nursing research is in the control of the military nursing community. To ensure success in the future, nurse investigators must have both a vision and a plan as a military nursing community. Advancing the practice of military nursing and its response to the requirements of military readiness and deployment remains both the mission and the priority of nursing research. The TriService Nursing Research Program serves as a catalyst for stimulating the synergistic endeavors of the three military nursing services to advance the science of military nursing. For the Year 2002 and beyond, the TriService Nursing Research Program is positioned to support those endeavors.

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